ENVIRONMENTAL AUDIT

2008

Mount Allison University



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Preface

Since 1998, in increments of two or three years, Mount Allison students have conducted an environmental audit of the university. The audits evaluate Mount Allison's overall environmental performance, specifically its progress on implementing the Environmental Policy adopted in 1999. The indicators employed in this fifth audit include many of the official indicators set out in that policy as well as benchmarks established through the hard work and wisdom of the former auditors.

Since the publication of the last audit in 2005, climate change has demanded increasing attention globally. In November 2007, the Intergovernmental Panel on Climate Change (IPCC) released its fourth Climate Change Assessment which dispelled once and for all uncertainty about the link between human activity and climate change and called attention to the very real consequences of inaction. The following month, the IPCC and Al Gore were awarded the Nobel Peace Prize for their efforts to raise awareness about anthropogenic climate change and to lay the foundations for the necessary measures to counteract it. As both consumers of natural resources and cultivators of human resources, universities have the potential and responsibility to take leadership on this issue. Putting moral imperatives aside, with skyrocketing fuel prices, government regulations on the horizon, and an increasingly environmentally conscious pool of prospective students, to be sustainable as an institution requires that we be environmentally sustainable.

Since 2005, some impressive strides have been made towards developing a vision of sustainability for Mount Allison. In 2005, the Environmental Issues Committee was reconstituted with a renewed vigour and redefined mandate. The committee has found a receptive audience in the university's top administration which signaled its commitment to the environment in 2007 by including it as a focus pillar in Mount Allison's Strategic Statement and as a JUMP campaign fund-raising priority.

With this momentum building, it is an exciting time to be at Mount Allison. In 2008-2009 the university will be hosting a region-wide Campus Carbon-0 Mission Summit as well as many distinguished environmental speakers as part of the President's Series on Climate Change and Global Citizenship. In September, the new Student Centre will open, showcasing some of the latest green building techniques and technologies. Other noteworthy advances since the last audit include a formalized commitment to local food in Jennings, the successful merger of the Geography and Environment Department, and a perceptible rise in student activism with such initiatives as the Campus Climate Challenge and Project DELTA.

While the university is leading in some areas, it is lagging behind in others. Mount Allison continues to use virgin paper for all of its printing and relies on nuclear power and bunker oil for electricity and heat. Buildings are overdue for maintenance, leading to energy and water waste. The campus fleet makes frequent short trips across campus and students and faculty make regular long ones across the globe. More serious than the failure to take certain initiatives, though, is the failure to cooperate on them and communicate them internally and externally. Many campus community members still seem to be unaware of Mount Allison's environmental initiatives and the reasons for taking these steps. There are groups on campus and off working towards common goals without benefitting from each other's efforts. Finally, ideas and audit recommendations are quickly forgotten, leaving the next generation to start from scratch.

This audit is intended to serve as a reminder of our past success and a springboard for future sustainability. It is our hope that the short and long term goals put forward in this audit are read and responded to by relevant parties. Short term goals are typically manageable steps which can be taken within the next 5 years which support long term goals for the next decade and beyond.

Happy reading,
Becky McMillan, Vanessa Yu & Tyler Goodwin
Environmental Auditors 2008

Executive Summary

Thank you for your interest in Mount Allison University's fifth bi/triennial environmental audit, which tracks the institution's progress towards mitigating its ecological footprint. Through previous audits, independent research, on-site visits, and interviews we summarized the status quo and highlighted our strengths and weaknesses in order to make recommendations and set goals that will enable Mount Allison to reach the desired outcome of carbon neutrality. It must be emphasized that carbon offsets alone will not protect our autonomy; lifestyle shifts that involve permanent reductions are a necessity. Some minor adjustments have been made to the indicators, which are used to capture the general trends. Previously, indicators have weighed into a grading system for each section—this is an idea that we would like to see reincarnated but did not have the resources to bring about during the 2008 audit. The threats associated with climate change grow stronger with each passing audit and thus the response must also be louder. The following is a synoposis of each chapter but a full read of the audit is encouraged as it contains information pertinent to you regardless of your role in the campus community.

Academic Opportunities

Environmental education at Mount Allison got a facelift, with the successful merging of the Environmental Studies/Science Programmes and the Geography Department in 2006. The newly formed Geography & Environment Department has been experiencing unprecedented popularity. Outside of the Department, some new environmental content has also been added and faculty members from all disciplines continue to conduct innovative environmental research. Links should continue to be made between Departments to promote environmental scholarship, as well as with other academic institutions and community organizations.

Dining Services

Major improvements have been made in Dining Services since the last audit. In 2006, Aramark replaced Sodexho as Mount Allison's food service provider. As part of their contract, they are required to procure 33% of their food from local sources. Currently, Aramark is exceeding this goal with an average of 40% local food. Steps have also been taken to reduce food waste. As of September 2007, students have been required to scrape their own plates and in May 2008, Jennings went tray-less. While these improvements are impressive, more attention needs to be paid to waste management. Currently, Jennings food waste is being sent directly to landfill (although this is being addressed). Steps are also still needed to green the menu, including introducing organic options, serving in-season items, and purchasing sustainable seafood.

Water Use

Few changes have been made to Mount Allison's water conservation efforts since the last audit. Old fixtures continue to be replaced, improving the efficiency of the university's water use. The installation of a rain water cistern in the new Student Centre represents a major step in the right direction. This precedent should be built upon by incorporating the use of rainwater and grey water wherever possible and by experimenting with technologies such as pausable shower heads. In addition to technical fixes, the campus community should be educated about the importance of conservation measures such as turning off taps and taking shorter and staggered showers.

New Building and Renovations

Despite claims of insufficient resources, it is in the university's own financial interest to build long-lasting, energy efficient and stimulating buildings. A design metric, such as Green Globes or LEED, can help to guide construction

and verify claims of sustainability. This fall the new Student Centre (the university's second Green Globes certified building) opened, featuring several of the latest new green building materials and techniques. With the surge of interest in this field and a shortage of expertise, it is important to build in-house expertise in this area. In addition, a progressive transition from reactive to planned maintenance is a necessity.

Energy Use

Energy efficiency has been a top priority for Facilities Management since the last audit; however more can still be done to reduce the impact of the university's energy needs on its budget and the environment. The energy plan currently being developed by the department should contain concrete energy use reduction targets with deadlines for their achievement. The university must also continue to explore renewable energy technology as these options become more accessible and less expensive relative to conventional fuels as well as strategies for offsetting its fossil fuel emissions.

Air Emissions

Since the last audit, climate change has garnered increasing attention globally. The link between human activity and climate change is now irrefutable, compelling us to curb our carbon emissions. In 2007-08, Mount Allison released roughly 11,889 tonnes of C02 equivalents from heating and electricity, transportation, solid waste, fertilizer, and food – similar to the figures calculated for the 2005 audit. Mount Allison should address its significant climate footprint by adopting a comprehensive carbon policy with concrete targets and working towards the ultimate goal of carbon neutrality.

Transportation

Mount Allison should entice first year students to leave their vehicles at home, invest in a fleet of 9 passenger hybrid vans, replace as many task vehicles as possible with clean, low impact vehicles, and visibly support our carpooling program through promotion and incentives in order to decrease the emissions from discretionary ground travel. Through initiatives like the Admissions Office's "Three for Free" program, we are communicating to outsiders, including prospective students, our awareness of transportation related emissions. Although Mount Allison is not a commuter campus, students from across the country and the world hope to call it their alma mater, which presents the need to offset air travel. Overall, campus community members are better informed and concerned about their chosen mode of transportation even if the concern is only fueled by gas prices. Two new bike racks will be erected beside the new Student Centre and the Town of Sackville has recognized the popularity of cycling by establishing a Shared Route and their own racks.

Solid Waste

The simplicity of Westmorland-Albert Solid Waste Commissions' Wet/Dry/HHW system has been complicated as a result of human error and mixed messages. This will be addressed in the fall of 2008 through a pilot project in the Avard-Dixon building where a centralized garbage collection system with Wet/Dry/redeemable units is being launched. In March, 2cg Waste Management Consulting Services conducted a Waste Audit and wrote a Green Plan for Waste to focus our reduction and diversion action. Since the last audit, Mount Allison has produced less waste; the average load taken to PBS shrank from 2.35 tonnes in 2006-07 to 1.2-1.9 tonnes in 2007-08 and we produced 56.48 fewer tonnes of waste in 2007 than 2005. A branded communication and education campaign to reduce contamination and highlight reduction/reuse/recycling programs such as Dump and Donate would ensure that we continue to make regular gains in this area.

Paper Consumption

Our digital dependence seems to have done little to wean us off of our paper addiction. Efforts have been made to reduce Mount Allison's paper consumption including setting all central printers to print double-sided and switching over to WebCT and other electronic processes in many departments. However, if real cuts are to be made a campus-wide reduction strategy is needed. Such a program would involve training, awareness-raising, and new academic policies. Mount Allison is also currently using 100% virgin and non-FSC certified copy paper, a practice which needs to be addressed.

Hazardous Materials

Hazardous materials management is one of Mount Allison's strongest areas. This is largely due to the costliness of working with chemicals and increasingly stringent government regulations. There is room for improvement in ensuring that effective, environmentally friendly supplies are used, but the situation is expected to improve as demand climbs, premiums for these products shrink, and their formulae improve.

Grounds Keeping

The Grounds Keeping Department incorporates environmental considerations into its routine operations. With the IPM system, pesticides are only used as a last resort. In addition, three trees are typically planted for every one removed, species are chosen to minimize necessary inputs, and waste from the grounds continues to be converted to mulch and compost. These informal practices should be turned into policies to ensure that the department's commitment to ecology survives. More efforts could also be made to minimize mowing, make the grounds more interactive, and communicate work on the grounds to the campus community.

Environmental Protection

While Mount Allison's daily operations pose few major environmental risks, its proximity to sensitive wetland ecosystems demands extra diligence. Facilities Management is currently developing a Hazardous Materials Spill Response Policy which will increase its capacity to respond to environmental risks. That said, prevention should be the foremost priority. Recommended measures include the construction of concrete containments around the main heating tank and Grounds Shop's diesel tank and the performance of a campus-wide risk analysis.

Procurement

From cleaning products to carpet, Mount Allison has started considering the environmental impacts of its consumption. Environmental specifications were included in RFPs for the new Student Centre, energy efficiency is a top consideration in choosing electronics, and individual departments have started requesting environmentally-friendly products. With a plethora of green goods on the market, Mount Allison's purchasing department should perform more research in this area and communicate findings to CCMs to better inform their purchasing decisions. A commitment to green buying should also be made by adding an environmental clause to the Purchasing Policy.

Stewardship

The last audit noted that while individual initiatives were being taken, Mount Allison lacked a clear overarching vision for campus sustainability. With the inclusion of the environment as a pillar of the President's Strategic Statement and the resurrection of the Environmental Issues Committee (EIC), this climate seems to be changing. This year is an environmentally-themed year for Mount Allison, with the Campus Carbon 0-Mission Summit being hosted by Mount Allison September 2008 and the year-long, President's Series on Climate Change and Global Citizenship. One major area that demands improvement is communication both internally and externally. Recognizing this, the university has also hired consultants to communicate its environmental achievements and help direct future initiatives. Other steps that should be taken include establishing a reporting system for the EIC, officially responding to audit recommendations, and the hiring of a sustainability coordinator to help implement them.

"Today universities continue to be organized into dozens of separate departments reflecting their disciplines, each doing their own thing, with limited communication between them. Even [...] where the basic beliefs are in conflict. Thus does the Department of Economics church out students whose entire training is rooted in an assumption of unending economic growth – and the economy keeps humming. Meanwhile, earth scientists write about the immutable principles of thermodynamics that speak to the impossibility of such growth – and the Earth keeps getting hotter (M'Gonigle & Starke, 2006:32)."

Chapter 1 - Academic Opportunities

Introduction

The emergence of the academic "discipline" in the 18th and 19th centuries allowed researchers to focus on single components of complex systems. The clarity and precision enabled by specialization led to rapid technological change, but did little to question the impacts of that technology or why it should exist in the first place. It is becoming increasingly apparent that this type of reductionist thinking is harmful to people and the environment. Overcoming the complex issues of climate change and environmental degradation will require us to think outside of these academic boxes.

Mount Allison has long recognized the value of holistic education, priding itself on its commitment to the development of the "whole person". Yet, as Dr. David Suzuki (2008) suggests, we sometimes forget that this person cannot exist independently of the natural world. According to Suzuki, educating people on the reality of the biosphere within which we live and derive a living is the crux of the great challenge for today's academics.

Mount Allison has consistently incorporated environmental content into the curriculum of many of its programmes and since the last audit, great strides have been made with the successful consolidation of the Geography and Environment Department, the greening of other departments, and the plethora of environmental education opportunities offered outside of the classroom. The importance of environmental education was also confirmed in the Strategic Statement released in 2007 which highlighted the environment and related themes (globalization and its consequences, public and community service and citizenship) as focus clusters. However, while the university continues to produce many outstanding green citizens, as at the time of the last audit, it is possible that some students leave without ever having an introduction to environmental issues.

Audit Evaluation

Quality of the Environmental Course Offerings

Indicator 1. Progress of environmental curriculum.

In 2006, a proposal was put forward for the creation of a new joint Geography and Environment Department. The merger, which came into effect in the 2007-2008 Academic Calendar, rationalized the three undergraduate environmental programmes, Geography, Environmental Studies and Environmental Science, into a single Department which offers a BA in Geography, a BA in Environmental Studies, and a BSc in Environmental Science. The separate sections for each programme were removed from the Academic Calendar and the course designations GEOG (Geography), ENSC (Environmental Science), and ENST (Environmental Studies) were replaced with GENV and GENS which refer to the Human Geography or Environmental Studies and Physical Geography or Environmental Science streams of study, respectively.

The consolidation reflects an emerging trend in North American universities towards combined Geography and Environment programmes and aims to meet the increasing student demand for comprehensive environmental offerings. Given the interdisciplinary nature of environmental scholarship, combining the three programmes was appropriate and added a much needed sense of coherency. Previously, these programmes were suffering from an absence of identity. This was especially true of Environmental Science which had been a neglected stand alone programme within the Faculty of Science. Now the programme and its coordinator, Dr. Zoe Finkel, enjoy the added benefits of a home department such as peer reviewing and shared curricular

development. In addition, the Environmental Science major has been streamlined, with only 63 required credits in the 2007-2008 Academic Calendar as compared with 75 in the 2006-2007 Calendar.

Significant changes to the Geography and Environment Department with the consolidation included the introduction of a minor in Environmental Science and thesis-based honours degrees in Environmental Studies and Environmental Science. Since the option has been made available, several students have expressed interest in pursuing honours for the 2008-2009 year.

Among other changes to the curriculum, the two introductory courses were renamed from *Introduction to Human Geography* and *Introduction to Physical Geography* to *Introduction to the Human Environment* (GENV 1201) and *Introduction to the Physical Environment* (GENS 1401) respectively. Content from the former *Introduction to Environmental Studies* (ENST 1001) course was transferred into GENV 1201, allowing for the incorporation of more advanced environmental content into the introductory Environmental Studies course which is now called *Contemporary Environmental Issues* (GENV 2001) and taught at the second year level. Three new 4000 level courses were added: *International Environmental Affairs* (GENV 4111), *Canadian Environmental Planning and Management* (GENV 4201), and *Resource Communities and the Multinational Corporation* (GENV 4211). These took the place of the *Issues in Environmental Studies* course (ENST 4000) which was eliminated. Overall, changes to existing courses and the introduction of new environmentally-themed courses have resulted in a net increase in environmental content in the Geography programme.

Administration has begun to recognize the growing popularity of Geography and Environment and has responded with an increase in resources for the department including the hiring of a full time lab technician and the allocation of approximately four new office spaces in the Avard-Dixon building when the Meighen Centre moves into the new Student Centre this September.

Advances in the environmental curriculum have also been seen outside of the Geography and Environment Department. For example, in the 2008 winter semester the International Relations *Global Governance Simulation* course (INLR 4101) challenged students to adopt the roles of the world's major players in negotiating an international climate change treaty. In the winter of 2008, a special *Environmental Law* course was also offered. The course acted as both a Geography and Environment credit (GENV 4951) and a Political Science credit (POLS 4701). These initiatives are representative of a general decrease in the territorial nature of academic disciplines and a movement towards interdisciplinary environmental education.

While these initiatives are promising, some programmes could be "greened" further. For example, the Commerce Department could offer courses on corporate environmental responsibility or incorporate more environmental content into its existing *Business Ethics* course. Unfortunately, our interviews revealed that while departments may be open to expanding their curriculums, faculty members are already spread too thin in many areas.

The Dollars and Sense of Sustainability

Corporations like Walmart and Starbucks are recognizing the value of adopting more sustainable practices and university commerce and business programs are responding to the growing popularity of green business. For example, St. Francis Xavier offers a course called *Business, Sustainability, and Profitability* which explores ways in which businesses can be positive forces towards the realization of global sustainability (St. Francis Xavier University, 2008). UPEI offers a similar upper-level business course called *The Natural Step for Business* (UPEI, 2008).

Indicator 2. Local community resources, such as the Canadian Wildlife Service are utilized and local regional issues are integrated into coursework.

- In the past, the Canadian Wildlife Service (CWS) has been an underexploited resource by faculty and students. However, this situation has improved in recent years. Dr.Diana Hamilton (Biology) has collaborated with CWS staff on a variety of projects related to mudflat and salt marsh ecology. Dr. Jenn Baltzer, a recent addition to the Biology Department, also has an interest in field ecology, making future additional collaborative work possible. The Atlantic Canada Conservation Data Centre housed in the President's Cottage is also under utilized by the university.

Mount Allison's Biogeography class doing field work at Mount Uniacke.

- In 2006, Mount Allison's Coastal Wetlands Institute signed a letter of understanding with the community-based Tantramar Wetlands Centre to reinforce their shared commitment to environmental education. While the letter lays the foundation for future cooperation, nothing concrete has come about as a result of the letter.
- In 2007, the Bay of Fundy was designated as a World Biosphere Reserve under UNESCO's Man and the Biosphere programme. This could potentially create new opportunities for cooperative research and monitoring in the region. Mount Allison's Dr. Paul Bogaard is the Vice Chair of the Fundy Biosphere Reserve Interim Board of Directors.
- Many of the courses in the Geography and Environment Department and Faculty of Science address municipal and regional issues and bring in local experts.

Indicator 3. Cases and examples derived from the audit or other on campus environmental work are incorporated into coursework.

Over the past three years, incorporation of the environmental audits and Environmental Policy into coursework has been limited. In 2005, audit findings were presented to the *Introduction to Environmental Studies* class and, in the past, the university Environmental Policy was used as a case study in the *Geography and Public Policy* (now *Canadian Environmental Policy*) class. However it seems that many students, faculty, and staff are still unfamiliar with or unaware of these documents.

Campus environmental issues have been integrated into some courses. For example Dr. Brad Walters' *Contemporary Environmental Issues* course conducted a campus-wide climate change survey in the fall of 2007. Students in the Geography and Environment Department are also encouraged to pursue independent research projects which sometimes have a campus focus. For example, Natalie Gerum conducted an exploration of renewable energy technologies for application in the Cuthbertson House Sustainable Residence Initiative.

Student Enrollment

Indicator 4. Students taking courses with substantial environmental content.

The Geography and Environment Department, which houses many of the university's environmental courses, is experiencing unprecedented popularity. It now boasts the largest total enrolment levels of any Department in the Faculty of Social Science, ranging from 1026-1127 students over the three years since the last audit. The number of students who have declared majors/minors/honours in Geography/Environmental Studies/Environmental Science has increased by 68% over the course of the three years since the last audit and the increased enrolment has been met with an increase in the number of courses offered. Course offerings in the Geography and Environment Department have increased from 36 in 2005-2006 to 56 in 2007-2008.

Did you know?

Acadia University conducts a survey of its incoming students to gauge their level of environmental literacy and their interest in taking courses with sustainability content.

Widespread Community Education and Outreach

Indicator 5. The university offers programs to educate faculty on environmental issues.

There are no programs on campus to educate faculty on environmental issues or formal structures requiring faculty to commit a certain amount of time to sustainability training. However, as outlined in the next section, there are many opportunities for faculty who wish to increase their knowledge of the environment.

Indicator 6. Speakers, presentations, debates and other such methods are utilized to educate campus community members on environmental topics.

Over the past three years there have been a number of environmental speakers and conferences open to all members of the university community and occasionally the general public. For an overview of environmental speakers see Appendix 1.1.

During the weekend of September 19-21, 2008, Mount Allison hosted the 3rd annual Green Campuses Summit for universities in Atlantic Canada and the Northeastern United States. Building on the success of the previous summits at Acadia University and Colby College, the proposed theme, *Campus Carbon 0-Mission*, will explored campus carbon emissions and the university's role in reducing its climate impact.

Coinciding with the conference, Lester Brown, founder of the Worldwatch Institute and founder and president of the Earth Policy Institute, gave the Josiah-Wood Lecture on September 20, 2008. His talk is part of a year-long environmental speakers' series entitled the *President's Series on Climate Change & Global Citizenship*. The series kicked off at Commencement 2008 with an address by Dr. Brad Walters.

Indicator 7. Faculty environmental research.

A number of Mount Allison faculty members are involved in innovative research in the environmental field. Many of these professors are supported by Natural Science and Engineering Council (NSERC) or the Social Sciences and Humanities Research Council of Canada research grants and involve students in their work. For a list of faculty members, compiled by Dr. Tim Reiffenstein, see Appendix 1.2.

Mount Allison University benefits from the McCain Family Endowment for Teaching Fellows and Professorships which supports the enhancement of teaching across the faculties of Science, Arts and Social Sciences. The Faculty of Social Sciences has chosen to rotate its McCain postdoctoral teaching fellowship between its various academic departments. As indicated in the last audit, in 2005 the McCain Postdoctoral Fellowship was reserved for Geography, however due to teaching shortages it was ultimately awarded to the Commerce Department.

For the 2007-2008 year, in keeping with three of the academic clusters identified in the 2008 President's Executive Group Strategic Directions: the environment, globalization and its consequences, and public and community service and citizenship, the Geography and Environment Department prepared a proposal recommending the appointment of an

interdisciplinary Teaching Fellow in International Environmental Policy. The result was the appointment of Dr. Keith Child whose areas of interest include international political economy, development theory, global environmental politics, gender, African politics, agrarian issues, democratic transition, trade, and land access. Dr. Child's recent work has focused political ecology issues related to the Mabira Forest Reserve Giveaway and Bujagali Dam Project in central Uganda.

Summary

Since the last audit, major improvements have been made in environmental education, both in and outside of the classroom. As a small school, Mount Allison's academic strength is in the breadth of its programmes and not the depth of its course offerings. While the addition of green courses is certainly to be encouraged, with limited resources, the most feasible way to advance environmental curriculum in the short term is by making links between programmes and taking advantage of readily available resources. The merging of Geography and the Environmental Studies and Science programmes and multidisciplinary courses like *Environmental Law* represent a good step in this direction. The flexibility that the Geography and Environment Department allows with course selection and independent study projects also helps students get the most out of their programmes. Areas that still need improvement are partnerships with local environmental resources and the incorporation of campus environmental issues into coursework.

Goals & Recommendations

Short Term Goals

- Conduct a Sustainability Literacy Survey to determine incoming students' awareness of environmental issues and interest in taking courses with sustainability content.
- Present the results of the 2008 Environmental Audit to relevant courses.
- Flag courses in the Academic Calendar that contain substantial environmental content.

Long Term Goals

- Hire an interdisciplinary Research Chair in Environmental Policy as part of the JUMP campaign funding.
- Integrate the Environmental Audit and other campus sustainability projects into the academic curriculum through an interdisciplinary project-based campus sustainability course.
- "Green" departments that are currently deficient in sustainability content by adding innovative new courses and by allowing for more shared curricular development.
- Build partnerships with local environmental organizations through collaborative research, shared resources, and student internships.
- Explore opportunities for "hybrid" (combined academic and technical) degrees, for example by combining Environmental Science at Mount Allison with GIS training at a community college. Seek input from outside of the university in programme planning.

Cool Campuses

The University of Prince Edward Island incorporates its environmental audit into its Environmental Studies programme! In 2005, students in UPEI's ENV 202 *Introduction to Sustainability* course conducted the university's first Campus Sustainability Audit using the *Campus Sustainability Assessment Framework* as their major term project (UPEI 2005). Oberlin College in Ohio also combines campus and curriculum. Its course ENVS 312 *Campus Sustainability: a Practicum* aims to complement wider university efforts at implementing Oberlin's Environmental Policy adopted in 2004 and reaching their goal of achieving carbon neutrality articulated in 2006. The course combines conventional lectures and discussion sessions with the development of solutions to real problems related to energy, water, materials, food, transportation, and waste.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Progress of environmental curriculum	Faculty and curricular additions since 2002 have improved the progress of Mount Allison's environmental curriculum.	The merger of the Geography & Environment and the addition of new course offerings have improved the progress of Mount Allison's environmental curriculum.	Continue integrating environmental content into all disciplines. Flag courses in the Academic Calendar with substantial environmental content.	Explore opportunities for innovative programmes, such as hybrid degrees (academic and technical).
Local community resources, such as the Canadian Wildlife Service are utilized and local regional issues are integrated into coursework	Unavailable.	Utilization of local resources in coursework and research is on an individual basis.	At least 25% of courses should include regional content.	At least 50%. Seek donor support for student internship positions and other partnerships.
Cases and examples derived from the audit or other on campus environmental work are incorporated into coursework	N/A	The audit has been an underutilized classroom tool. Some campus examples are incorporated into coursework and independent study.	Present the 2008 Environmental Audit to students, faculty, and staff.	Have students conduct the environmental audit as part of a problem-based course.
Students taking courses with substantial environmental content	Unavailable.	Enrolment rates in the Introductory Geography & Environment courses is high.		100%.
Faculty are educated on environmental issues	There are no programs to educate faculty on these issues.	Same.	Encourage faculty members to incorporate the academic focus clusters outlined in the Strategic Statement, including the Environment.	
Speakers, presentations, debates and other such methods are utilized to educate campus community members on environmental topics	N/A	Since 2005, there have been a number of environmentally themed conferences and speakers on campus. In 2008, Mount Allison hosted the *Carbon 0-Mission Summit* and the *President's Series on Climate Change*.	Promote the speakers' series and conference to faculty, staff, students, and community members.	Secure long-term funding for at least one major environmental speaker per year.
Faculty environmental research	Unavailable.	A large number of faculty members conduct research in the environmental field and involve students in their work.		Include the creation of an interdisciplinary endowed chair position in Environmental Policy as part of the JUMP campaign priorities.

Never eat more than you can lift.
Miss Piggy (on going tray-less)

Chapter 2 - Dining Services

Introduction

The success of modern agriculture can be attributed largely to the abundance of cheap fossil fuels. In fact, we invest about ten times more energy to grow, process, package, and transport our food than the food actually gives us! Climate change and global energy shortages should be compelling us to reexamine our diets, yet whether sitting down to supper at Jennings or grabbing a bite to go at the Golden "A," few of us actually consider the environmental implications of our menu choices.

This chapter asks "How sustainable is Mount Allison's food system?" As in the last audit, categories for this section were borrowed from the Penn State Indicators Report:

1. Dining Hall Diet
2. Dining Hall Waste
3. Dining Hall Policies

Many changes have been made in Dining Services since the last audit. On May 1st, 2006, Aramark replaced Sodexho as Mount Allison's food services provider. The University has signed a seven year contract with Aramark to manage all of its Dining Services including Jennings Dining Hall, catering, and the two retail cafés: the Flying Bean Café in the Library and the Golden "A" Café in the STUD. The latter will be relocated to the new Student Centre in September 2008.

In a pioneering move for Canadian universities, Mount Allison included an environmental clause in its request for proposals (RFP) for a new service provider. Three food service companies (Sodexho, Aramark, and Chartwells) submitted proposals and a committee, which included three student representatives, was formed to review their proposal packages. Following the selection of Aramark, a public forum was held in which students were invited to ask questions and voice concerns. During contract negotiations, a survey was also sent to Mount Allison students soliciting information about their preferences. Notably, the survey attempted to gauge people's willingness to pay for local or organic options. Generally, people indicated that they would be willing to pay around $100 more. In 2006-2007 the price of the meal plans did increase by approximately that amount to allow Dining Services to undertake several initiatives which will be further discussed in this chapter.

With Aramark as the new provider, major progress has been made in food waste reduction, food purchasing, and menu planning. Residence surveys over the past three years also show a sharp increase in overall customer satisfaction. In 2005, when Jennings was managed by Sodexho, 19.8% of residence students indicated that they were satisfied with the Dining Services (i.e. they assigned it a mark of 7-10 on a 10 point scale) as compared with 55.3% in 2006 and 63.0% in 2007. While these advances are noteworthy, there is always room for improvement.

Dining Hall Diet

Indicator 1. Menu planning accommodates several different diet types and incorporates student concerns.

DID YOU KNOW?

Aramark has been recognized for its efforts to cater to vegetarians! In 2005, the company received the PETA Proggy Award for the Best Vegetarian-Friendly Food Service Operator and in 2006 Mount Allison was named by PETA as one of the Top Five schools in Canada for Vegetarian Choice.

In Jennings, vegetarians are accommodated by a separate vegetarian station which is operational during every lunch and dinner. The salad bar is open every day and the made-to-order station always

offers a vegetarian entrée. A range of vegetarian protein options are available, including veggie burgers and mock chicken and beef. For the 2008-2009 year, Dining Services has revamped its vegetarian menu using recipes taken from PETA's website. Over the summer, they will work on infusing these recipes with locally available ingredients. Jennings Dining Hall has been featuring international food options in its Saturday buffets which are low on the food chain and also celebrate the countries of Mount Allison's students. The café in the new Student Centre will serve one international meal every day.

In 2006, the Sustainable Residence partnered with the previous service provider, Sodexho, to organize a Sustainable Food Day in Jennings during which all menu items were vegetarian with the exception of the deli and grill stations. This event has not been replicated but Dining Services has indicated that they are open to the possibility of hosting it in 2008-2009.

As indicated in the last audit, other dietary restrictions are treated on a case-by-case basis. A dietary needs fridge stocks soy milk and other specialty items and gluten-free baked goods are purchased from Rosie's Gluten-Free Gourmet Foods Ltd. in Riverview, NB.

A comment board is posted in Jennings and students may also submit anonymous feedback online. In addition, Dining Services sends a survey to all students twice annually regarding Jennings Hall and the retail outlets and the annual residence survey includes questions about the dining hall. The SAC Food Committee, which meets once every three weeks, provides another avenue for students to communicate their concerns.

Indicator 2. Information regarding ingredients and processing are available to students at point of purchase.

Students can currently make use of an electronic kiosk called "Mytrition" to inquire about the nutritional information of some menu items (about 50%). Aramark is in the process of updating this database to include more of its dishes. Ingredients are not posted by the dishes but can be requested from the cooks.

Dining Hall Waste

Indicator 3. Measures are in place to prevent excess leftovers.

In September 2007, Mount Allison implemented a plate scraping system in Jennings Hall. (Although the previous audit indicated that this would come into effect in the fall of 2005, the transition was delayed). In having the students scrape their plates themselves, it is hoped that they will be more conscious of the amount of food they are taking. The scraping station also lightens the workload and improves working conditions for the dining hall employees. Results have been positive. In September, when compliance was at its highest the amount of food waste was reduced by an estimated 44%. In December and January, when students were more complacent with their scraping, the reduction was roughly

19%. Next September, residence assistants will be training students about the program and there will be visible signs at the scraping station explaining the impetus for the system.

This summer, the dining hall has gone tray-less in order to reduce food waste and the energy and water consumption associated with washing the trays. The café in the new Student Centre will also be tray-less when it opens in September.

Aramark does as much on-demand cooking as possible so as to minimize food waste. Each station takes count of the number of portions served during a meal time and presents the figures at production meetings to be used as the basis for future meal planning.

Indicator 4. Packaging and waste are minimized.

Most food, including condiments and cereal, is purchased in bulk which reduces packaging requirements. The only items in the dining hall that are individually packaged are the peanut butter packets (for allergy reasons) and specialty teas. In the catering service, more individually packaged items are used including creamers, condiments, jam, and butter.

Indicator 5. Compost and recycling programs are used.

DID YOU KNOW?

Currently it is estimated that up to 55 tonnes or 55,000kg of food from the dining hall are landfilled annually. This works out to about 55kg/meal plan/year (2cg, 2008).

The 2005 audit highlighted waste management as Jennings' strongest area. At the time of the last audit all Jennings waste, including food scraps, was sorted as part of the Wet/Dry system. As of 2006, however, plate scrapings and kitchen waste have been sent directly to landfill. (For a diagram of Mount Allison's food stream, see Appendix 2.1). A waste audit of the campus conducted in 2008 concluded that the most obvious lost waste diversion opportunities at Mount Allison are from Jennings Hall. In fact, the audit estimated that Mount Allison's waste diversion rate decreased from 60% in 2005-2006 to 45% in 2007-2008 largely because of the food waste disposal (2cg, 2008).

Food waste is pulped using a Hobart WastePro Pulper which reduces its volume by squeezing out moisture. From there the waste is discharged into a garbage pail lined with a green bag. Full bins are stored in a refrigerated room and collected by PBS about three times a week. PBS takes the waste to their transfer station in the Sackville Industrial Park where it is loaded onto a tractor trailer with other non-Wet/Dry waste from the town. From the station it is driven to WASWC to be landfilled. The primary reason food waste is not being treated separately as part of the wet stream, is that, given their current setup, PBS is not equipped to handle the amount and frequency of deliveries required. It was also noted that the weight of the bins (40kg each) and the incompatibility of the Jennings loading dock with the PBS recycling truck make pickups cumbersome.

It was recommended in the waste audit that dining hall food waste be included in the Wet/Dry program and sent to WASWC for composting. As suggested in the audit, the university is currently looking into installing wet and dry compactors behind the Jennings Dining Hall, allowing easy access for food waste disposal. The transport of waste from Jennings to the compactor could be facilitated by purchasing smaller bins with wheels for easier maneuvering. As a temporary solution, this summer Facilities Management is submitting a tender to solicit bids for a private contractor to transport the waste to WASWC to be composted. The department has considered onsite composting, as was recommended in the last environmental audit, however contrary to what was suggested in the

2005 audit, it has been determined that composting on site does not constitute a cost savings in the short run. The minimum upfront cost of a composter is estimated to be half a million dollars.

Currently, Jennings' used vegetable oil is being taken by PBS. Soon, however, Aramark will be selling the oil to a company called Rothsay for conversion to biodiesel.

All other Jennings Waste enters the Wet/Dry streams. Cardboard boxes are made available for students during peak moving times and plastic ice cream buckets are used by the residences, in particular Thornton and Carriage House, to store food.

Indicator 6. China or reusable plastics are used.

China is used in the dining hall at all times, except in the event that the dishwasher breaks down.

The two retail cafés use black biodegradable dishware made of cornstarch. The dishware is purchased through the Distribution Group BUNZL, however no more information on this product could be found. This is sometimes used in bagged lunches and at outdoor events but because of the high cost of the dishware, it is not always used. The biodegradable dishware has not been well advertised so students may not be aware that it should be put in the green bag and not the blue.

The last audit indicated that the café in the new student centre would be equipped with a dishwasher to allow food consumed inside of the café to be served on china instead of disposable dishware. Although the dishwasher is being installed, the café will continue using the biodegradable plastic dishes because of concerns about the china dishes being removed from the premises. Administrative Services has considered the possibility of charging a deposit that would allow students to use china dishes for the year, as is done at other universities; however there are no immediate plans to implement this system in 2008-2009.

Currently, students who bring reusable travel mugs to the retail cafés pay for a small beverage regardless of the size of their mug. In 2007-2008, students with reusable mugs were also entered into a draw for prizes. In September 2008, the retail cafes will begin charging a 10 cent surcharge on paper cups to deter people from using them. Reusable mugs branded with the Sustainability MTA logo were given to all residence students this year in conjunction with the Campus Climate Challenge and these will be included in the frosh packs next September.

Dining Hall Policies

Indicator 7. Food is procured from local sources and is in season.

As part of Aramark's contract, they are required to procure 33% of their food from local sources. At Mount Allison, local is defined as a "Maritime Diet", meaning that food is produced within a 5 hour radius of Sackville. Items, such as bread and McCain's frozen vegetables, for which the ingredients are not grown locally but are processed in the region, are also considered to be "local". Currently, Jennings has exceeded this benchmark, with an estimated average of 40% of its food being purchased from local sources. This figure is higher during the summer and fall when more produce is in season and lower during the winter when less fresh produce is available locally.

Items sourced locally year-round include apples, blueberries, mushrooms, onions, cabbage, carrots, potatoes, shrimp, lobster, salmon, pork, chicken, eggs, dairy products, and some beef. Local options procured when they are in season include strawberries, raspberries, greens, peppers, broccoli, tomatoes, and fresh herbs.

In the last audit, it was noted that the university had been exploring the option of purchasing local grains, specifically from Speerville Mill. It was determined, however, that this would be too expensive. With the skyrocketing world grain prices, it would be worth continuing to perform cost comparisons.

Dining Services deals both with distributors who buy from local farmers and directly with the farmers themselves; however it can be challenging

dealing directly with farmers who are not accustomed to meeting the demands of large food service providers. Administrative Services has been working with the Nova Scotia and New Brunswick Departments of Agriculture on capacity building initiatives, including the development of a new course for farmers offered by the Nova Scotia Department of Agriculture.

Growing a Healthy Economy

The Spirit of Nova Scotia is a grassroots movement dedicated to building a sustainable and prosperous future for the province. The organization's Environment Catalyst Team led by Dr. Ralph Martin of the Nova Scotia Agricultural College has recently launched a Fresh Food initiative which aims to create a local food strategy for Nova Scotia. One of the proposed projects is a wholesale produce auction which would connect large buyers, such as universities, with the region's farmers.

Indicator 8. Organic and fair trade options are served.

Currently Dining Services purchases very few organic options largely due to the cost differential between organic and non-organic options.

All of the coffee served by Dining Services is now certified fair trade and organic. The dining hall serves half JustUs! coffee and half Aramark's Expresso brand coffee. The Flying Bean Café serves exclusively JustUs! coffee and the Golden "A" Café serves Expresso coffee. Presently fair trade tea is not served in the retail cafés but the currently served Lipton tea will be replaced by JustUs! tea in Fall 2008. JustUs! is in the process of developing fair trade sugar packets which Aramark intends to purchase for the retail cafés. Fair trade cocoa is used for catering special events and is served in the Golden "A" and the Flying Bean, although it is not well advertised.

Indicator 9. Fish species at risk are not served.

Dining Services and Aramark do not have an explicit policy governing which fish species may be purchased. Jennings serves mainly haddock, tuna, and farmed Atlantic salmon, as well as occasionally crab, lobster, and shrimp. Farmed Atlantic salmon is a species at risk.

Summary

Dining Services is one of the areas of campus that has received the most attention for its commitment to sustainability. Indeed, procuring 40% of food locally represents a major step in the right direction. However, more detailed food policies should be adopted to consider how the food is produced and processed. Specifically, a target should be established for organic food and a seafood purchasing policy should be implemented. In the long run, the definition of "local" should also be reexamined to limit its scope to include only items that are grown, and not just processed or packaged, in the region. Serving only produce that is in season, even when it is not local, would ensure that food is bought when it tastes best and would help to raise awareness about food production among students. Dining Services has taken impressive measures to reduce waste. Areas for improvement include ensuring that food waste is composted and favouring reusable dishware whenever possible.

Goals & Recommendations

Short Term Goals

Dining Hall Diet

- Move towards lower on the food chain items, decreasing the overall amount of meat served.
- Make ingredients of menu items available to students and advertise when local or organic foods are being served.

Dining Hall Waste

- Use china dishes in the new retail café. Launch an educational campaign explaining the reason for serving on china instead of on disposable dishes and discouraging people from removing the dishes.
- Arrange to have Jennings food waste sent to WASWC for composting.

- Launch an educational campaign for the biodegradable dishware.

Dining Hall Policies

- Serve one meal a month where all of the food is local *and* organic.
- Work towards 10% organic options. Give preference to local organic and local non-organic items but try to find an organic alternative if an item isn't available in the region.
  - Specific organic items that could be purchased include salad greens, whole wheat pasta from Speerville to replace the current unsatisfactory brand, storage crops (potatoes, cabbage, apples, squash), and beef.
- Establish a food policy that requires the following to be considered when purchasing food:
  - Farming practices
  - Labour practices
  - Distance traveled
  - Treatment of animals
  - Packaging
- Use a seasonality chart when menu-planning. Serve in-season items even when they're not local.

The Ecology Action Centre in Halifax has put together *Eating by the Seasons*, a cook book with 160 recipes organized by the seasons. Recipes feature mostly, but not exclusively, Nova Scotia-grown bounty. Books are available for only $10 and can be ordered from:

Ecology Action Centre
2705 Fern Lane
Halifax, Nova Scotia
Canada B3K 4L3
(902) 429-2202

- Establish a policy to serve only sustainable seafood. Commit to not serving any of the red-flagged species in *Canada's Seafood Guide* (see Appendix 2.2) and to limiting the purchase of yellow-flagged species.
- Eliminate the mandatory meal plan requirement for students living in the Sustainable Residence. Dedicate the MacGregor lot adjacent to Cuthbertson House for use as a house garden. Provide an honorarium for residents staying for the summer to tend to the plot.

Long Term Goals

- Purchase equipment for preparing vegetables and meat. This would reduce labour expenditures for chopping and eliminate the need to purchase pre-prepared foods, making purchasing from smaller local farms more feasible.
- Continue working towards the goal of 90-95% local food. Make use of the ACORN office and their online database when looking for suppliers.
- When Mount Allison negotiates its next Dining Services contract, specify an increase in more sustainable food options. Consider reexamining the definition of local food to include food which is grown, and not only processed, in the Maritimes.
- Install a wet waste compactor behind Jennings hall to facilitate the transport of food waste to WASWC for composting.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Diet				
Menu planning accommodates several different diet types and incorporates student concerns	Vegetarians are accommodated in the meal rotation. Other diets are accommodated on a per student basis.	Vegetarians are accommodated at all stations. Other diets are accommodated with a special needs fridge and on a case-by-case basis.	Move towards lower on the food chain options, reducing the overall amount of meat served.	
Information regarding ingredients and processing are available to students	A binder is available, however not at the point of purchase. Information is also accessible online.	Students may access some nutritional information using the "Mytrition" electronic kiosk. Ingredients must be solicited from the chefs. Starting in September, signage will highlight local items.	Make ingredients available to students. Make sure to highlight when sustainable options are served.	Make available information on where all food items come from and how they are processed.
Waste				
Measures are in place to prevent excess leftovers	On-demand cooking is used and has been successful in reducing the amount of food being thrown out.	On-demand cooking, a plate scraping station introduced in September 2007, and going tray-less in the spring of 2008 all help to reduce food waste.	Keep it up!	
Packaging waste is minimized	Much packaging is avoided by buying food in bulk.	Same.	Negotiate programs for returning packaging to the vendor.	
Composting and recycling programs are used	All waste is sent to WASWC which diverts wet waste to compost heaps and recycles materials through a sophisticated sorting system.	Waste from within the dining hall is diverted through the wet/dry system. Food waste from the kitchen and scraping station is land filled.	Hire a private contractor to transport food waste to WASWC for composting.	Install a wet waste compactor behind Jennings to facilitate the transport of food waste to WASWC.
China or reusable plastics	China is used in the meal	China is used in the meal	Use china dishes in the new	Become a cup-free campus.

are used	hall.	hall. Biodegradable plastic dishware is used in the retail cafes. A 10 cent surcharge will be applied to paper cups in the retail cafés in September 2008.	retail café when food is being consumed on the premises. Educate campus community members about the biodegradable dishware.	Completely remove paper cups from the retail cafés.
Purchasing Policies				
Food is procured from local sources and is in season	A small portion is procured from locals sources.	An average of 40% is procured from local sources.	Serve one meal a month where all food is local *and* organic. Serve in-season items even when they are not local. Use a seasonality chart to assist in menu planning. Dedicate the MacGregor lot adjacent to the Sustainable Residence for use as a residence garden.	90-95%
Organic and fair trade options are served	JustUs! fair trade and organic coffee products available campus-wide as of Fall 2005. Looking into Speerville Mill for local organic grains. Commitment to CHSRI and rest of student body to provide meals with local/organic ingredients twice a week.	Few organic options are served. All coffee on campus is either JustUs! or Expresso brand fair trade and organic.	Serve 10% organic options. Choose organic when products are not available locally.	30%
Fish species at risk are not served	Currently Mt. A serves mainly haddock, tuna, farmed Atlantic salmon and occasionally crab. Farmed Atlantic salmon is a species at risk.	There is no policy governing which fish can be served.	Make a pledge to not serve the red-flagged species in Canada's Seafood Guide and limit the yellow-flagged species.	

Water sustains all.

Thales of Miletus, 600 B.C.

Chapter 3 - Water Use

Introduction

As far back as 600 B.C. humans understood the value of our precious water resources. Yet, in Canada, where water is cheap and seemingly abundant, we sometimes forget the importance of protecting our fragile water sources and conserving water for future generations.

This chapter will explore questions of both water quantity and quality. With its students, Mount Allison places the largest demand on Sackville's water resources, even higher than the town's industries. The town's water is drawn from a set of deep wells and is then sent through a treatment system before being delivered to the consumer. Since the last audit, the town of Sackville contracted the management of its treatment facility over to an international company called Veolia. With the change in management, water quality at the point of delivery has improved considerably.

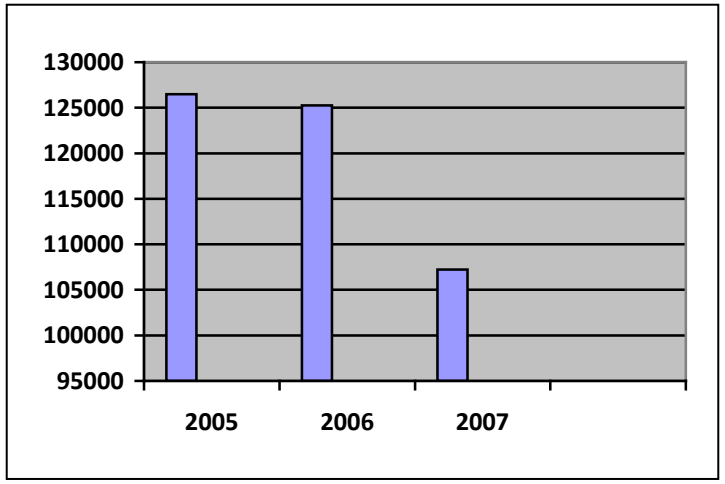
Audit Evaluation

Water consumption

Indicator 1. Total potable water consumption.

Mount Allison's water consumption has decreased over the past three years. The largest reductions have been seen in the Heating Plant and Athletics Centre. No baseline has been established for water consumption to date, however the Technical Services Manager has agreed that this should be made a priority in order to better measure trends in consumption and to allow Facilities Management to develop targets.

The graph depicts Mount Allison's water consumption, in liters, since the last audit:



Indicator 2. Storm and grey water use.

The only place water is recycled on campus is in the dishwasher in Jennings Hall. The machine is filled once and then the water is recirculated through the dishwasher until it is no longer clean enough to be reused. In other words, the water is drained and refilled only as needed. A rain collection system is being installed in the new Student Centre which will be used to flush the toilets throughout the building. A cistern will collect rain water from the roof and distribute it to the bathrooms as necessary. This will reduce that amount of wasted potable water.

Water Management

Indicator 3. Leaking Fixtures

Fixture leaks are usually fixed within twenty four hours. "Blitzes" are also performed periodically to find leaking fixtures.

Indicator 4. Water Metering.

All buildings on campus are metered for water use. This is required by the town for billing purposes. Although Mount Allison is the largest consumer of water in Sackville, it pays the same rate as residential consumers. With the introduction of Veolia in 2006, an additional fee of $0.40 per cubic

meter was added for water treatment. Currently, Mount Allison pays $2.10 per cubic meter of water which can be broken down into three parts: $0.85 for the water itself, $0.40 for water treatment, and $0.85 for the treatment and disposal of waste water. Waste water is not metered, so, although some water is consumed and not disposed of through the town system, residents are charged for the disposal of all of the water they purchase.

Indicator 5. Pressure testing for leaks.

Mount Allison does not pressure test for leaks. The pressure of the water being delivered to the university is sufficiently high (90 psi) that Facilities Management becomes aware of a leak almost immediately, eliminating the need for routine testing.

Indicator 6. Efficiency of fixtures.

Low flow fixtures are installed in all new or renovated buildings and old fixtures are replaced with low flow technology as they are needed. Fixtures are replaced on a worst-first basis.

Waterless urinals were tested in Facilities Management but were not installed elsewhere on campus due the misperceived added maintenance required to keep them clean and odour problems reported by several staff members. It was noted, however, that odour is not an issue if they are properly maintained after every 400 flushes. Waterless urinals are used successfully in high traffic, public places including hospitals and shopping centres throughout the world.

Pressure assisting features have been added to some of the older toilets to reduce the amount of water used in flushing, however these are prone to clogging. These toilets should be replaced by newer low flow units.

It is important to educate campus community members about the reasons for installing water conserving features. Many students have complained about the reduced pressure of low flow shower heads and have even gone as far as ripping fixtures from the wall!

Water Use in Rest Rooms

Device	Traditional water use	Low-flow water use
Toilet (tank)	13-22 liters per flush	6 liters per Flush
Shower	20-22 liters per minute	8 liters per minute
Faucet	20-22 liters per minute	8 liters per minute

Indicator 7. Motion detectors installed.

Motion detectors have been installed in select fountains, sinks, showers, and toilets on campus. In some places, automatic fixtures (especially the water fountains) were subsequently removed and replaced with manual fixtures because they were too sensitive and turning on without demand.

Indicator 8. Quantity of waste water produced.

Waste water is not metered so this figure is unknown.

Indicator 9. Quantity of waste water treated.

100% of waste water is treated naturally in a sewage lagoon located in the Sackville Industrial Park.

Indicator 10. Storm water contaminant separation/collection.

None of Mount Allison's storm drains connect to a collection/treatment system, however as mentioned above, the new Student Centre will be equipped with a cistern to collect rain water and filter it for use in the

building's toilets.

Projects and Education

Indicator 11. Projects undertaken to decrease water usage.

Some departments have taken strides to limit water use, for example, the Grounds Keeping department continues to use drought-resistant landscaping and other strategies to limit its water use (See chapter on Grounds Keeping). However, there is no campus-wide education program and no records are kept of water efficient fixtures installed on campus. That being said, the Technical Services Manager has asked that plumbers count all of the fixtures so that a funding proposal may be written for retrofitting the remaining fixtures.

Veolia: No More Green Hair!

In 2006, after persistent problems with water discoloration and pipe corrosion, Sackville chose to privatize its water treatment system. A multinational company called Veolia was contracted for the management of the treatment facility which is located on Walker Road; however the town maintains control over the distribution system and waste water.

Protection

Indicator 12. Ground Water Quality.

The Tantramar River watershed continues to be of high quality. The major source water quality issue outlined in the 2005 audit was the contamination of the King Street parking lot area, formerly home to the Enterprise Foundry. Although the 2005 audit indicated that the remediation would be completed by 2007, the project has taken longer than predicted and is still ongoing.

While little has changed at the point of extraction, drinking water at the point of delivery has improved noticeably since the last audit (See box on Veolia).

Indicator 13. Backflow prevention.

Not all buildings are equipped with backflow prevention systems, however this technology is installed in new buildings and when existing buildings are renovated. Backflow prevention systems are not currently required under government legislation.

Disposal

Indicator 14. Waste water disposal.

Once treated in the waste water lagoon, water is drained back into the Tantramar River.

Summary

Few changes have been made in Mount Allison's water conservation efforts since the last audit. Old fixtures continue to be replaced, improving the efficiency of the university's water use. The installation of a rain water cistern in the new Student Centre represents a major step in the right direction! Hopefully this precedent will be built upon, by incorporating the use of rainwater and grey water in other areas of campus that do not require treated water for example bathrooms and in grounds keeping. In addition to technical fixes, the campus community should be educated about the importance of such conservation measures as turning off taps and taking shorter and staggered showers. Aside from water quantity, major improvements have been seen in the quality of Sackville's water at the point of delivery.

Goals & Recommendations

Short Term Goals

Continue reducing water consumption:

Structural

- Conduct an inventory of the remaining conventional fixtures on campus. Replace these with low flow alternatives.
- Install pause buttons on shower heads to facilitate staggered showering.
- Set a baseline for water use using this year's data. Use this as a benchmark for tracking future water consumption and for setting water reduction targets.

- Use rain and grey water on campus wherever possible, for example, in washrooms and grounds keeping.
- Explore natural filtration systems for grey water, such as living machines, and other technologies for reducing waste water such as composting toilets.
- Re-test waterless urinals since they're capable of saving 100,00L of water annually per fixture. With an array of make and models to select from there's surely one out there that will satisfy our needs, especially when they've been proven not only to reduce water usage but to reduce vandalism, maintenance, and repair as well!

Operational

- Continue to fix leaks in a timely fashion.
- Continue to use drought-resistant landscaping methods.

Educational

- Spearhead a campus-wide educational campaign that informs the community about water conservation methods and their benefits, both environmental and economic.
- Raise awareness about the water efficient fixtures on campus and why they are being installed.

Long Term Goals

- Reduce Mount Allison's waste water by fifty percent.
- Explore water efficient laundry and dishwashing technology when making future purchases.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Total water consumption.	Average of 177 million liters (Between 2002/03 and 2004/05)	Average of 128 million liters of water. Good job!	Establish a base line using this year's data and set reduction targets.	Reduce water consumption by 25% over the next 10 years.
Storm and grey water reuse.	Mt. A does not reuse its storm or grey water.	The new Student Centre will reuse rainwater in its bathrooms.	Reuse at least 25%. Explore other opportunities for groundwater use such as in grounds keeping.	Reuse at least 50%.
Leaking fixtures.	Most repairs are done within 24 hours of detection.	No change.	Keep up the good work!	
Water metering.	All buildings on campus are metered for water use.	No change since last audit.		
Pressure testing for leaks.	Mount Allison does not pressure test for leaks.	No change since last audit.		
Efficiency of fixtures.	Inefficient fixtures are replaced with low flow technology during renovations or construction. Alternatives to water saving appliances, such as composting toilets, have not been considered.	No change.	Conduct an inventory of the remaining conventional fixtures on campus and replace these with low flow fixtures. Install pause buttons on shower heads in residences.	Consider water efficiency when purchasing dishwashers and laundry machines. Explore other technologies such as composting toilets.
Motion detectors installed.	With new buildings motion sensors are being installed in the bathrooms and on drinking fountains. There is no plan to retrofit existing buildings.	Motion detectors have been removed from drinking fountains as they were proven to be inefficient.	50% of the bathrooms on campus should have motion detectors.	Motion detectors should be installed in 100% of bathrooms.
Quantity of Wastewater produced.	Wastewater is not metered.	Same.	Create a plan with town on waste water metering.	Work on reducing wastewater, including exploring grey water treatment and reuse.

Quantity of wastewater treated.	100%	100%	Keep it up!	
Storm water contaminant separations/collection.	None of Mt. A's storm water drains connect to contamination separation/collection systems.	No change.		
Projects are undertaken to decrease water usage.	Grounds Keeping and Jennings Hall have made significant reductions in water use.	No change.	Spearhead an educational campaign about water reduction and its benefits. Inform CCMs about water efficient fixtures.	
Ground water quality.	The King Street remediation project is ongoing and is expected to continue for at least two years.	The King Street remediation is still ongoing.		Take steps to prevent groundwater contamination (see chapter on Environmental Protection).
Backflow prevention.	When renovating laboratories, backflow prevention devices are installed, however, there are many taps that have not been fitted.	No change.	Retrofit at least 50% of the university with backflow prevention.	Retrofit 100% of the university with backflow prevention.
Waste water disposal.	Mount Allison does not treat its waste water on site and has not considered doing so.	No change.		Explore natural filtration systems for grey water, such as living machines.

"Without people nothing is possible, but without institutions nothing is lasting."

Jean Monnet

Chapter 4 - New Buildings and Renovations

Introduction

There is a spectrum of benefits to incorporating sustainability into our structures, including a lower impact on the surrounding environment, energy savings, reduced maintenance needs, cleaner operations, and an improved bottom line. Green building techniques can range from something as simple as orienting a building to take advantage of passive solar to incorporating the newest energy saving technologies. Educated reflection on environmental factors is crucial during the initial design of a building because including these considerations as an afterthought can be costly and difficult.

Our campus encompasses many generations of buildings from the antiquated and dilapidated to the modern and leading-edge. Due to budgetary constraints, institutions often find themselves continuously repairing older buildings that should be either fully restored or removed. When a building is being built, it is important to plan for capital renewal during the early stages. This will ensure that there is enough money set aside for renovations and system upgrades when the structure reaches maturity, thereby increasing its lifespan (Folsom, 2008).

In addition to the environmental and economic benefits, green facilities also attract attention and influence a prospective student's decision. Features like daylighting, panoramic views, and good indoor air quality create a more pleasant atmosphere for working and learning and can therefore help to increase productivity. The frequently cited excuse for deferring building and renovations is a lack of funding, however it has been proven that productivity gains can save money!

A 1% increase in productivity can pay for all energy costs in the average building (Carnegie Mellon University cited in Simpson, 2008); 3.7% can pay for all [first, operating, maintenance and repair] costs over a 30 yr. period (Athena Institute cited on Canada Green Building Council Website, 2008).

The following indicators evaluate Mount Allison's progress on greening its ivory towers.

Indicator 1. Response time for major building maintenance and repair is monitored and minimized.

Upon noticing minor damages or malfunctions, the immediate reaction of most campus community members (CCMs) is not to notify Fix-it, but rather to wait until someone else notices it, allowing the problem to mushroom. Improving the chain of reporting will improve the response time for repairs.

Simply defined, Deferred Maintenance (DM) is maintenance work deferred to a future budget cycle while the Current Replacement Value (CRV) is defined as the total amount of expenditure in current dollars required to replace the Universities facilities to its optimal condition. Together, these two sums are used to generate the Facilities Condition Index (FCI) which can be used as a general assessment of the overall status of the Universities infrastructure.

The Facilities Condition Index (FCI) is a "comparative indicator of the relative condition of facilities" expressed as a percentage. It includes everything from roofs to mechanical systems.

$$\text{FCI (\%)} = \frac{\text{Deferred Maintenance (DM)}}{\text{Current Replacement Value (CRV)}} \times 100$$

If the FCI is:	Condition Rating:
0 to 5%	- Good
5 to 10%	- Fair
Over 10%	- Poor
Approx 20%	**- Most Atlantic-Canadian universities**

Mount Allison's FCI was helped during this audit period with the renovation of the Trueman complex into the new Student Centre and the sale and removal of MacGregor House. Nevertheless, if funding does not keep pace with the maintenance requirements of the University, the FCI will increase. This will also mean that in the next budget cycle, not only does the current years maintenance requirements have to be addressed but also the outstanding maintenance requirements from previous building cycles. These maintenance items will have had time to deteriorate and potentially cause additional problems.

Most buildings are constructed with an average lifetime of fifty years. A significant portion of buildings on campus were built between1960-70, so in theory they are due to expire around the time of the next audit. This will create a significant spike in the amount of buildings reaching the end of their life expectancy and requiring renewal or replacement.

In reality, Mount Allison has not managed to keep up with its deferred maintenance. The list of projects that Facilities Management implements is identified on the Alterations and Renovations (A&R) list. The budget for A&R can be described as discretionary funding when considering a short term horizon. As DM only worsens over time, in the long term, serious problems can result if the appropriate decisions and funding is not allocated to control the FCI.

Facilities Master Plan

Plans are moving ahead according to the Facilities Master Plan (FMP). Once the new Student Centre is completed, work on the new Fine and Performing Arts Centre (the current Student Centre) is scheduled to begin, followed by the Athletic Centre. The systematic restoration of these core buildings and the removal of the excess buildings, especially those with deferred maintenance issues (Sprague, Baxter, and MacGregor), will decrease the FCI and help to improve on the overall condition of our facilities. Facilities Management tries to use the FMP to focus its maintenance activities on buildings to maximize the benefit of the A&R plan.

Indicator 2. Prior to new building or renovation projects an environmental impact analysis (EIA) is completed.

Comprehensive EIAs are not required under current governmental legislation for large construction projects on campuses. However, Mount Allison has followed some voluntary guidelines in its planning.

The Government of Canada's Commercial Building Incentive Program (CBIP) under which Campbell Hall was built no longer exists. For the McConnell Fitness Centre and the new Student Centre, Facilities Management followed Green Globes rating system, a Canadian Green Building Counsel (CaGBC) recognized design metric, which is based on the Building Research Establishment and Environment Assessment Method (BREEAM).

Facilities Management chose Green Globes over Leadership in Energy and Environmental Design (LEED) because it is a more suitable metric both in terms of the implementation of the standard and the cost of the certification process itself.

Small projects such as the two new observatory towers and additional handicap parking receive little attention. However the cumulative effect of

numerous smaller projects is equivalent to that of a larger one and should not be overlooked. Small projects usually only warrant a class impact assessment, which often takes the form of a checklist of considerations for the commonly associated biophysical and socioeconomic ramifications (Environmental Management on Canadian Campuses, 1995).

David Stewart & Associates Inc. continues to be contracted for new building projects. Focus groups are formed and relevant departments are consulted during the planning process, but building users have stressed that these sessions cannot be isolated incidents and would like to be updated on a regular basis as developments occur. Students are invited to attend information sessions once a project has been approved, but their concerns and suggestions should be raised to the SAC president or an equivalent representative outside of these events.

Indicator 3. Building construction or renovation makes use of green building techniques and materials.

Techniques identified in the last audit continue to be applied and developed with the new Student Centre hailed as our best performing building thus far. It is projected to have a 60% Green Globes certification assessment rating, which is high for a retrofitted building (Trueman House). See Appendix 7.1 for the list of significant conservation design features!

To minimize downstream costs, low maintenance materials should be used wherever possible. The use of mold-resistant drywall, for example, can avoid problems down the road. There are cases when natural finishes can be left untreated for example, un-painted red brick walls, un-waxed hardwood floors, and exposed duct work. Interior paint, once applied, needs to be redone every 8-12 years.

What is Green Globes? (Sounds like a variety of grapes!): "Green Globes in the only interactive, online green building assessment and design protocol (Green Globes)."
How it works: Mt. A either performs the assessment, which will then be certified by an independent third-party verifier, or the university can chose to have the verifier perform the assessment and certify it online simultaneously. "Buildings that receive a certification assessment score of above 55% are given a rating of three to five globes (Green Globes)."

It is important for the university to consider the full life cycle of products that are being purchased, so as to minimize its impact not only on local ecosystems but also those abroad. For example, although some products are off-gassed in the warehouse only the building users benefit from the lower localized air pollution. The Sustainable Residence presents a good opportunity to test natural building materials like straw bale walls, cork flooring, and vegetated roofs. When local, green materials are not available, we look to global markets.

Summary

Institutions of higher education are looked to for leadership on green building as they have historically been hubs for the climate science research that opened society's eyes to the threat of climate change. To outsiders, our facilities symbolize the type of individuals who dwell inside. Let it be a beacon of our dedication to concrete action.

"Demand for green design services in some areas is outpacing available knowledge base, and mistakes are being made (Simpson, 2008:142)." This is especially true in the Atlantic Provinces which have been slow to respond to new trends. To protect ourselves from misinformation,

Carpet: Is it really necessary?

Mt. A has only installed carpet tiles in spaces throughout the new Student Centre that require stable acoustics for their daily operations. Compared to sheet carpeting, tiles allow for spot replacement and treatment, extending the life of the overall flooring. Contrary to popular belief, properly maintained carpet can pose fewer risks than other types of flooring when immobile furniture is involved because water from mopping stagnates under pieces and eventually forms mold. Carpet has a bad name on this campus because next to no money has been spent on it in the last 35 years during which time it should have ideally been replaced 3-4 times.

Facilities Management should develop in-house expertise in green building. After all, building in an environmentally efficient way can actually make our operations more economically efficient if we plan for the greatest energy savings and condition ourselves to look beyond "value engineering" (individual components) and shortsighted payback periods (Simpson, 2008).

DID YOU KNOW? The research of Dr. Ralph Breuning, Head of the Physics Department, involves the design and creation of energy efficient glazings for windows?

Goals & Recommendations

Long Term Goals

Make the Sustainable Residence truly sustainable.

- Dig a garden in the MacGregor lot and install a root cellar to accommodate storage crops (See Dining Services or Grounds Keeping).
- Renovate Cuthbertson OR build a new satellite house from the ground up to maintain the intimate, communal living style AND/OR Build the next full-size residence as a sustainable residence infusing it with the latest and greatest green technology to make this option more widely available.
- Establish funds for deferred maintenance in existing buildings and "planned capital renewal" in future buildings to discontinue shortchanging the A&R List.
- Subtract unutilized or overspecialized square footage.

Short Term Goals

Save more water.

- Harness storm water and reduce impervious surface to decrease runoff.
- Increase porous pavement for onsite storm water infiltration.

Save more energy.

- Make better use of space by holding evening classes and offering good rental rates to community groups.
- Remove the Monastery and Bermuda House from "campus".
- Continue caulking windows and retrofitting old buildings with energy efficient windows.

Raise awareness about green building techniques.

- Self-promote through permanent education panels located beside resource conservation features.
- Reform the building design process for enjoyment, transparency, and inclusivity, which may lead to academic opportunities.

- Integrate faculty/student research into design.
- Use open-concept designs to decrease construction by replacing individual offices with cubicles and setting aside a series of meeting rooms whenever possible.
- Develop environmental performance goals prior to the start of any project.
- As well as continuing to hire contractors who are LEED certified, invest in our employees by offering to finance their training in a CaGBC standard to build capacity independent of outside organizations and to protect our own interests.

Minimize physical impact of building.

- Reduce contamination and erosion during construction.
- Conduct class impact assessments for smaller projects.
- Use maintenance free materials i.e. paperless, mold resistant dry wall.
- Build reflective or vegetated rooftops to reduce heating and cooling loads.

Maximize stewardship potential through facilities.

- Strengthen chain of reporting to decrease repair response time.
- Maintain aesthetic sensibilities.
- Switch from Green Globes design metric to LEED-Canada (or equivalent).
- Use "whole systems costing" when planning new buildings.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Response time for building maintenance and repairs is monitored and minimized.	Repairs are prioritized according to necessity. The FCI of Mt. A is far from what it should be, an indication that a great deal of deferred maintenance remains on campus and the facility is not in great condition.	It is apparent that our facilities are not in great condition even without the FCI. Facilities Management is well aware that the vast majority of the campus buildings will reach 50 yrs. of age before the next audit. Construction on major buildings echo funding trends. Preventative measure must be taken now to mitigate an increasing stockpile of problems.	Encourage CCMs to maintain buildings in good condition and promote use of Fix-it. Maintain funding to stabilize current FCI rating.	Construct low-maintenance buildings and plan for capital renewal to permanently decrease FCI.
Prior to new building or renovation projects an environmental impact assessment (EIA) is completed.	An environmental consultant was brought in for the new Fitness Centre and Campbell Hall projects. Mount Allison will continue to use his services on future projects.	A design metric continues to be followed for large projects aided by an environmental consultant.	Conduct class impact assessment for smaller projects. Minimize negative-impacts. Apply precautionary and polluter pays principles.	Conduct impact assessments for all projects regardless of size and achieve LEED equivalency.
Building construction or renovation makes use of green building techniques and materials.	Environmentally friendly materials continue to be pilot tested.	Many additional techniques are being premiered at Mt. A in the new Student Centre. Materials are largely locally procured and environmentally friendly materials are being requested. Our consultants are challenging manufacturers' claims.	Raise-awareness about green building techniques used on campus and use some in every building. Pilot test natural building materials.	Develop environmental performance goals and only build in a green manner!

I have no doubt that we will be successful in harnessing the sun's energy... if sunbeams were weapons of war, we would have had solar energy centuries ago.

Sir George Porter

Chapter 5 - Energy Use

Introduction

At Mount Allison, forty buildings are heated and powered, consuming an enormous amount of energy each year. Recognizing this, Facilities Management has taken steps to reduce its energy bills and climate footprint. A company called Enerplan Consultants was hired to conduct an Energy audit of the university in both 2004 and 2007. These reports identified opportunities to improve efficiency and ranked them in terms of impact. Following the 2004 audit, a proposal was put forward for an energy coordinator to oversee the implementation of its recommendations. The proposal was met with little support at the time, leaving the responsibility for energy efficiency in the able (but busy!) hands of the Technical Services Manager. Facilities Management is currently preparing to implement the recommendations made in the Enerplan reports.

Since the last audit, a natural gas line has been installed just outside the Heating Plant by Enbridge Gas. They have plans this fall to install gas lines throughout the town which will see the line extended to York, Salem and King Streets. There are no immediate plans for the University to switch to Natural Gas at this time. Facilities Management is preparing to install a summer boiler early next summer which would allow the main boilers of the Heating Plant to remain off-line and free the maintenance staff to conduct better preventive maintenance throughout the mechanical systems of the University. It is planned to have this boiler capable of burning either oil or natural gas.

Audit Evaluation

Indicator 1. Total energy consumption has decreased.

Since the 2005 audit, there have been no changes in the types of fuel types and the energy delivery system used at Mount Allison. Some areas of campus have experienced decreases in consumption (eg. Computing Services) while others have shown little change or have increased (Jennings and Harper Hall).

Energy Consumption at Mount Allison

Years (Jan-Dec)	Electricity (KWh)	Steam Flow	No. 5 Heavy oil (Liters)	No. 2 Light Oil (liters)	Low Sulfur Diesel (Liters)	Propane (Liters)
2003	11 289 852	58 615 710	2 269 765	75 931	5 920.9	29 194.4
2004	11 930 961	55 587 309	2 330 916	75 570	7 866.5	26 076.5
2006	11 468 137	35 709 703	2 082 483	64 122	5849.1	34 284.3
2007	11 255 766	33 811 640	2 145 824	69 366	5765.8	35 659.6

Sub-indicator 1. A baseline has been set as a standard to measure improvement in Mount Allison's energy consumption.

The university has yet to establish a baseline of energy consumption as has been recommended in the past two audits. The university must establish this baseline in order to chart its energy consumption and to set reduction targets for the future. The need for better metering and the establishment of a baseline will be addressed by the university as part of its energy management plan.

Sub-indicator 2. Buildings are constructed or renovated incorporating energy efficient technologies.

Mount Allison currently incorporates energy efficient technology into all new buildings and renovations. See the New Buildings and Renovations Chapter and Appendix 4.1 for more information on energy efficiency in the new Student Centre.

Sub-indicator 3. Buildings not in use are closed.

As indicated in the 2005 audit, buildings not in use during the summer or at any other time are closed. Bermuda House has been shut down since 2005 due to mould problems and the Monastery also continues to be closed. The minimum amount of heat is used in these buildings to ensure that the pipes do not freeze. Several buildings have been sold (See New Buildings and Renovations Chapter) which reduces the burden on Mount Allison's energy resources.

Sub-indicator 4. The HVAC systems are monitored and repairs are done in a timely fashion.

The HVAC systems has not changed since the last audit and continues to be controlled by the Energy Management Control System (EMCS) computer in Facilities Management. Siemens, the company that produces the EMCS, visits the university every four months to inspect the system to ensure that it is running properly. Many systems are showing their age and with the installation of the summer boiler, it is expected that the Heating Plant crew will be able to conduct more routine preventive maintenance inspections on our equipment to prolong their life expectancy and improve their efficiency.

In 2007-2008, Mount Allison's Computing Services undertook a server virtualization project with Saint Thomas University. Virtualization technology allows hardware resources to be shared among different operating systems and applications, reducing the number of computers required to run these systems. This decreases energy consumption by reducing energy requirements for operations and cooling. In 2008, the departments won Second Prize in the nationwide CAUBO Quality and Productivity Awards competition. Congratulations!

Indicator 2. Renewable energy is used.

There have been no changes in the types of fuels used since the last audit. NB Power, Mount Allison's electricity supplier, aims to purchase 10% of its power from renewable sources by 2016. The company has recently purchased an additional hydroelectric power station in Nepisiguit Falls, NB, that will produce 52 million kilowatt hours of electricity – enough to power approximately 3000 homes. To further help the company reach its goal, there are plans in place for the construction of a wind farm in Aulac, NB. The farm will house 43 wind turbines with a total output of 177 870 megawatt hours per day, enough to supply 10 300 homes (http://www.gnb.ca/cnb/news/ene/2008e0096en.htm).

Indicator 3. Government initiatives are monitored to ensure participation in relevant programs in the areas of pollution reduction and energy efficiency.

Programs continue to be monitored by individuals and departments.

Summary

Energy efficiency has been a top priority for Facilities Management since the last audit. However, more can still be done to reduce the impact of the university's energy needs on its budget and the environment. The energy plan being developed should contain concrete energy use reduction targets with deadlines for their achievement. The university must also continue to explore renewable energy technology as these options become more accessible and less expensive relative to conventional fuels as well as strategies for offsetting its fossil fuel emissions.

Goals & Recommendations

Short Term Goals

Continue to improve energy efficiency

- Set a baseline of energy consumption and use this as a starting point for the development of concrete energy use reduction targets.

- Keep records of the retrofits performed on campus. Implement education campaigns to explain the benefits of the retrofits are being installed on campus.
- Implement the Energy Management Plan distilled from the recommendations of the 2004 and 2007 Energy Audits.
- Weigh the pros and cons of installing personal thermostats in office spaces to allow faculty and staff more control over office temperatures.

Invest in renewable energy

- Pay close attention to technological advances in renewable energy as well as incentive programs for energy efficiency.
- Explore opportunities for supporting renewable energy projects through renewable energy certificates.

Long Term Goals

- Install a solar water heater when the Athletic Centre is renovated.
- Collaborate with other universities in the region on energy saving programs similar to the server virtualization project with Saint Thomas. This could include an Atlantic-wide Campus Climate Challenge.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Total energy consumption has decreased.	Energy consumption has increased but a plan is in the works to maximize reductions in consumption.	Some areas of campus have decreased while others have increased.		Collaborate with other universities in the region on energy saving projects, such as a regional Campus Climate Challenge.
Sub-indicator: 1. A baseline has been established as a standard against which improvement in energy consumption can be measured.	No baseline has been established. However, this should be accomplished in the near future.	No baseline has been set. Two energy audits (2004 and 2007) have formed the groundwork for an Energy Management Plan.	Set a baseline for energy consumption and continue to work on the implementation of the Energy Management Plan.	
2. Buildings are constructed or renovated incorporating energy efficient technologies.	New buildings and renovations on campus use state of the art energy efficient technologies.	Same.	Keep it up! Raise awareness of retrofits.	
3. Buildings not in use are closed.	Any buildings not used during the summer are closed. Buildings not used during the winter are winterized in the fall.	Same. Efforts have been made to reduce the square footage of campus.	Continue to find ways to reduce square footage.	
4. The HVAC systems are	A sophisticated computer	Same.	Ensure preventive	

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
monitored and repairs are done in a timely fashion.	system monitors the HVAC system and repairs are usually performed the same day they are detected.		maintenance is conducted on our HVAC systems.	
Alternative energy sources are used.	Investigations into alternative energy sources have so far been disappointing. The proposed wind turbine site was not appropriate, and solar panels have been found to be too expensive.	No alternative energy is being used on campus. NB power is investing in the development of wind power and aims to produce 10% of its power from renewable sources by 2016.	Keep tracking advances in renewable energy technology. Explore opportunities to invest in regional projects.	Install a solar water heater for the pool when the Athletic Centre is renovated.
Government initiatives are monitored to ensure participation.	Government initiatives are monitored on an individual or departmental basis.	Same.	Continue to monitor and participate in incentive programs.	

"The earth has a fever. And the fever is rising. The experts have told us it is not a passing affliction that will heal by itself. We asked for a second opinion. And a third. And a fourth. And the consistent conclusion, restated with increasing alarm, is that something basic is wrong. We are what is wrong, and we must make it right."

Al Gore upon accepting the 2007 Nobel Peace Prize

Chapter 6 - Air Emissions

Since the last audit, the urgency of climate change has demanded increasing attention globally. In November 2007, the Intergovernmental Panel on Climate Change released its fourth Climate Change Assessment which dispelled once and for all uncertainty about the link between human activity and climate and called attention to the very real consequences of inaction. If this assertion was not enough, oil shortages and sky rocketing energy prices give us little choice but to rethink our fossil fuel addiction.

Thus far, the audit has explored many of the areas of Mount Allison that contribute to the university's climate footprint: energy, transportation, solid waste, Dining Services, and Grounds Keeping. This chapter attempts to quantify that impact to facilitate comparisons and enable the university to set future targets.

The 2005 audit made use of a GHG emissions calculator developed by the New Hampshire-based organization Clean Air-Cool Planet (CA-CP) and modified for Canadian institutions by the Sierra Youth Coalition (SYC). Although this calculator is out-of-date, it was used again to maintain continuity. SYC is currently in the process of updating that calculator and a new and improved version should be available for use in the next audit. The calculator takes into consideration heating and electricity, fuel burned by the university fleet, nitrous oxide emissions from fertilizers used in grounds keeping, and hydrofluorocarbons in refrigerators. A figure is also calculated to account for emissions from food production using a pre-determined formula. Not included in the calculations presented here are refrigerators outside of residences or travel conducted for university business in vehicles not owned by the university.

From May 2007 to April 2008, Mount Allison released the equivalent 11,889 tonnes of CO_2 into the atmosphere. Since the last audit was conducted, a total of 36,093 tonnes have been emitted. This does not represent a significant departure from the figures presented in the last report.

Audit Evaluation

Indicator 1. Emission levels resulting from heat and electricity.

Heating and electricity continue to be Mount Allison's biggest contributors to GHG emissions. From May 2007 to April 2008 year the university released 11,844 tonnes of C02 from heating and electricity alone. This figure has increased slightly since the last audit.

Indicator 2. Emission levels resulting from transportation.

Mount Allison's fleet is composed of 16 vehicles, operated by different university departments. Consistent and complete records of fuel consumption are not kept, making it difficult to get an accurate picture of

total emissions. The volumes of gasoline and diesel used in the calculator were estimated from amounts spent at the pump per year and converted using average Canadian fuel prices for that year. It is important that information be documented as both a measure of cost and quantity to better enable future auditors to track the university's travel emissions.

Commuter Emissions

As already mentioned, emissions from commuters and other travel off campus were not included in calculations because this data was not available. Information on student, staff, and faculty travel should be documented as this represents a significant contributor to our climate footprint (see Transportation Chapter).

Indicator 3. Emission levels resulting from solid waste.

From May 2007 to April 2008, Mount Allison produced 142 tonnes of solid waste, with GHG emissions equivalent to 98 tonnes of CO_2. This figure is consistent with the previous two years.

Indicator 4. Emission levels resulting from fertilizer.

There were six different types of synthetic fertilizer used in 2007, not all of which contain nitrogen. A total of 1220 kg of synthetic nitrogen fertilizer was used that year with an average nitrogen content of 21%. This resulted in GHG emissions equivalent to roughly 1 tonne of CO_2.

Indicator 5. Emissions resulting from food.

The production of food produces GHG emissions in many ways: methane emissions from livestock and rice paddy production, nitrous oxide emissions from fertilizers, and carbon dioxide emissions from farm machinery, transportation, and processing and packaging to name a few. In the Clean Air-Cool Planet Calculator, these figures are averaged into the campus population input because measurements of GHGs from food vary depending upon diet, geographic location of suppliers, and chemicals used in food production. While this is an imperfect way to measure emissions, it is important to recognize the impact that food production has on our climate footprint.

Summary

During FY 07/08 Mount Allison released 11,889 tonnes of $C0_2$ equivalents from:

- Heating and Electricity
- Transportation
- Solid waste
- Fertilizer
- Food

The new numbers are consistent with the last audits numbers. The only major difference was in the amount of fertilizer used however emissions from fertilizers are small relative to those from heating and electricity.

Goals & Recommendations

Specific goals for reducing emissions are outlined in chapters on Dining Services, New Buildings and Renovations, Energy Use, Solid Waste, and Transportation.

Short Term Goals

- Use the newer more accurate CA-CP for the next audit. Try to calculate past emissions using the new calculator to facilitate comparisons and benchmarking.
- Adopt a carbon policy with concrete goals for emissions reductions.
- Explore offset programs and the potential of purchasing renewable energy certificates to support regional alternative power projects.
- Initiate an on campus offset program, such as planting trees on the farm property or other vacant lots.

Long Term Goals

- Collaborate with other universities in the Atlantic Provinces on emissions reduction efforts. These could take the form of a

standardized calculation system and an emissions trading program.

- Join other North American universities in working towards carbon neutrality.

"Kilometers are shorter than miles. Save gas. Take your next trip in kilometers."

George Carlin

Chapter 7 - Transportation

Introduction

In a matter of three years, human travel habits have sent food prices soaring and prompted the province of British Colombia to establish a carbon tax. Other provinces, including New Brunswick, are proposing to follow. If NB were to adopt BC's rate, it would mean an extra $0.024/litre of gas or $10/tonne of GHG emissions. For transportation to be affordable, flexibility is essential.

With its small pedestrian-friendly campus, Mount Allison has one of the lowest carbon footprints of any Canadian university when classes are in session. However, in-between semesters and during holidays, we burn more than our fair share of fossil fuels! 9% of our student population is international and 20% of our Canadian students are not from the Maritimes, requiring them to travel long distances in order to get here. Even more miles are accumulated in an effort to recruit these far flung students.

Mount Allison also participates in a plethora of international programs. The university sends an average of 23 students on exchange programs annually and receives many more. During Reading Week, school groups are globetrotting in order to lend a hand, experience other cultures, or just to enjoy themselves. These scenarios do not seem to satisfy the paradigm "thinking globally and acting locally", especially when one considers that the amount of fuel used in a Jumbo Jet could drive an average car four times around the world! But not to despair, there are ways to offset our travel bug tendencies.

Walking and cycling are the primary modes of transportation for campus community members (CCMs). The Transportation Survey conducted by Carla VanBesaleare's Data Analysis I class in 2005 reported that 70% of CCMs walk to the university. Of the 2105 students who participated in the survey, 85% lived within a 5km radius of Mount Allison. 82% of the 165 faculty members and 71% of 174 staff members surveyed lived in Sackville as well (although usually greater than 5 km away from campus). However, the survey revealed that even students, faculty, and staff who live in town do not necessarily leave their cars at home: 2.5%, 29%, and 40%, respectively, drive. Lowering these figures would improve air quality while minimizing traffic noise and congestion.

One way to work towards this goal is by promoting carpooling. Mt. A's Carpool Tool is an online database that was developed for the university free of charge by the University of Waterloo in 2005. Matches are found via postal codes and only those with a Mount Allison e-mail account may participate.

Parking

General parking is available off King Street and Salem Street, and behind Landsdowne Field, Thornton House, and Bermuda House. Some of these areas are designated for 24 hour parking while other locations are available for daytime parking only. Since Town parking on and around campus (for maximum of 2 hours) is ample and free, reserving premium parking for carpoolers would be futile. For the small amount of people it would deter, the staff requirements to enforce tiered parking, metering or other regulations would not make them worthwhile.

Admissions' Emissions

The Admissions Office had increased their number of travelling weeks from 43 in 2006 to 46 in 2007 but for the upcoming season they intend to condense it to 38. This department is committed to reducing their

sizeable carbon footprint. Projects in progress include travel bursaries that would be available to subsidize student ground travel, bus tours for prospective students leaving from regional high schools, expanding the Future Student webpage, Facebook, and subsidizing travel for members of the Student Ambassador program to recruit from their home communities during school breaks. Initiatives like carpooling to college fairs with other members of AARAO (Atlantic Association of Registrars and Admission Offices) and the "Three for Free" program are already underway. If a prospective student brings two friends along for a campus tour, Mount Allison will pay travel expenses up to $100.

Indicator 1. Bike racks are available at academic and residence buildings.
No new bike racks have been installed since the last audit which is reasonable given that there are already enough conveniently located around campus. With the completion of the new Student Centre in the of Summer 2008, 2 more bike racks will be unveiled, bringing the total up to 16. In addition, each residence has storage rooms where students can keep their bikes, although these are less convenient because they are locked and can only be opened by an RA/Don.

Throughout Sackville, signs have been installed to remind pedestrians, cyclists, and motorists that they are traveling on a Shared Route, and to be mindful of other road users. Bike racks were installed downtown in July 2008 to facilitate more convenient and secure parking. A campus bike route would have little impact on the way CCMs travel, while a separate bike course for all roads channeling into campus would improve traveling conditions for all. Unfortunately, bike lanes were determined by the town to be unfeasible since the roads in Sackville are not wide enough to accommodate them.

Indicator 2. Emission levels are taken into consideration when purchasing campus vehicles.
Our fleet of 16 vehicles (including 1 watercraft) is getting to be outdated and inefficient compared to newer vehicles which are manufactured to have better fuel economy. Low mileage in combination with a short lifespan is typical of our vehicles due to the start-stop driving patterns. See Appendix 7.1.

While lower emissions levels are expected from newer models, they are not a major consideration in university purchasing. Vehicle performance and longevity are given more weight, which is important given that vehicles are often forced to outlast their recommended life span (8 years for Facilities Management). The university should consider alternatives to conventional vehicles given that spending at the Ultramar has increased by roughly 17 % since the last audit. This trend will only be amplified in the years to come so the solution should not only be to use less gas but to eliminate our dependency on this non-renewable resource altogether.

Since the last audit, two replacement vehicles have been purchased. Custodial Services acquired a new truck in 2006 and Aramark will be purchasing a new flexible-fuel vehicle this summer. Grounds Keeping has also put in a request for a replacement. The size of the fleet should remain constant in the future, unless major changes are made to university square footage and operations. Upon completion of the new Student Centre, mail runs are expected to be 15-20 minutes shorter since more services will be clustered with the Bookstore allowing more opportunities for pick-ups/deliveries on foot and the Aramark van will no longer be making deliveries to the Golden "A" Café because food will be prepared on-site.

What is a Flexible-fuel vehicle??? "(FFVs) are designed to run on gasoline or a blend of up to 85% ethanol (E85). Except for a few engine and fuel system modifications, they are identical to gasoline-only models… However, since a gallon of ethanol contains less energy than a gallon of gasoline, FFVs typically get about 20-30% fewer miles per gallon when fueled with E85 (www.fueleconomy.gov)."

Most of the Grounds Keeping vehicles currently operate on diesel and all diesel vehicles are capable of running on biodiesel. Unfortunately, there is no local supplier who can provide the university with a manageable amount of fuel. Previously, the used cooking oil from Jennings Hall was sent to PBS, but plans are in place for September to sell it to a company called Rothesey for conversion to biodiesel. Jennings does not produce enough cooking oil to make its re-use feasible in the university's own vehicles. Nevertheless, recycling is something that should be supported!

During winter, Facilities Management staff members often opt to take the tunnels instead of using a vehicle for cross-campus trips. A bicycle is also made available to staff when conditions are favorable, although it is used by a few staff members. At times, an employee will drive to a location, unload their cargo and walk back. Other options for cross campus transport have been explored such as golf carts and ATVs (pending approval to drive on-road). A golf cart's inability to travel on the highway makes it less desirable than an ATV. The ZENN vehicle, which is also pending approval, is another potential lower impact substitute for select vehicles.

Vehicles are organized to multitask as much as possible, but it's not always suitable as equipment (pipe cutter, work bench, toolbox) that needs to be available at a moment's notice is stored in the back of some trucks.

That doesn't sound like a car!

Veggie oil is only suitable for longer trips, and therefore not appropriate for university vehicles which are constantly starting and stopping. These vehicles have a convertor and use conventional oil to heat up the engine before switching over to vegetable oil.

Biodiesel

In operation, diesel is required to start and stop the engine. Usually a mixture of 80% petro-diesel and 20% biodiesel (typically slightly refined veggie oil) is used, which must be kept in separate tanks for proper ignition. There is legitimate concern about the naturally occurring paraffin in biodiesel coagulating, but this problem can be solved by adding a specialized anti-gel agent for biodiesel or using winterized diesel—this is either already adjusted at the distributor before it is delivered to the pumps or can be done ad-hoc on-site. Not all warrantees on diesel vehicles provide coverage for bio-diesel substitution.

Hybrid vehicles have an engine that can run on 2 or more sources of power; typically gas-biofuel or gas-electric. Some even carry a natural gas tank allowing the driver to switch back and fourth—this would be a more feasible choice if the university began buying natural gas from Enbridge Gas.

Indicator 3. Adherence to and effectiveness of vehicle policy.

Facilities Management's vehicle policy celebrates its 10th anniversary this summer but its influence today is weaker than ever before. This is probably because it is out of date and unfamiliar to staff.

Vehicle access on campus roadways is limited to service vehicles, primarily our own, and engines are stopped during class change, in order to maintain pedestrians' right of way. Most routine deliveries are made to loading docks located throughout campus, while building materials are delivered directly to the work site.

Failure to maintain reliable inspection and fuel log books continues to be a problem, making it difficult to quantify improvements in this area. The 5 minute idling allowance, outlined in the policy, is too lenient given that leaving a vehicle running for more than 10 seconds uses more fuel than it takes to restart the engine.

Indicator 4. Status of Mount Allison commuter program.

During the 2007-2008 year, the membership of Mount Allison's Carpooling System did not grow because a registration e-mail reminder was not sent out in September. The method itself is ineffectual in reaching CCMs, particularly staff, who do not always use their Mount Allison e-mail accounts. In September 2005, 13 faculty and 10 student carpooling tags were released but more importantly 40% of students, 21% of faculty, and 15% of staff indicated that they carpooled in the survey. Interest in the program and other forms of alternative transportation, generally, are expected to increase concurrently with gas prices.

If a similar program could be established for irregular ride sharing, for example, cab rides to and from the Moncton Airport and weekend trips, efficiency, economy, and emissions levels could be severely improved. For the last three years, there has been a bulletin board located in the stairwell of the Student Centre for this purpose, but it has been rarely/ improperly used. It would be of great service to CCMs, if the university invested in a few 9-passenger vehicles with removable seats that could be rented on a not-for-profit basis. This would simplify transportation for moving, performance tours, sporting events, course-related travel, conferences, etc.

Summary

Every liter of gas burned releases roughly 2kg of heat-trapping carbon dioxide into the atmosphere! Keeping this in mind, when traveling any distance, lower impact forms of transportation should be chosen first. Modes of transportation can be seen on a continuum from lowest to highest impact: walk, skate, cycle, bus, tram, metro, train, ride share, drive (hybrid, biodiesel), fly, offset.

Efforts should therefore be made to make the lower impact options more accessible. Areas for improvement include improving carpooling and ridesharing programs, improving infrastructure for active transportation, and exploring alternative fuels, such as biofuels and electric vehicles. By switching to an alternative fuel not only will we save money at the pump, reduce noise pollution, and improve air quality, but we'll also extend the life of our vehicles because they can be gentler on the engine.

Goals & Recommendations

Short Term Goals

- Allow staff to work from home, when feasible.
- Explore telecommunication (webinars and video conferences) for guest lecturers and visiting speakers.
- Improve signage for locations and regulations of parking lots to reduce time and energy wasted idling and enforcing rules.
- Survey local interest in forming a biodiesel cooperative and offer to house the station on campus, if there is sufficient support for the project.
- Keep Facilities Management bike in good condition and add a basket for light equipment and a quick-adjust seat.
- Properly (re) train employees and revise Vehicle Policy to improve operation efficiency, performance, and safety while minimizing idling.
- Jointly offer a workshop on bike safety with the Town of Sackville, which includes by-laws and hand signals.
- Support regular critical mass bike rides.

What are "critical mass" bike rides? They are world-wide events to celebrate and promote active transportation. Participants have been taking to the street on the last Friday of every month since the first critical mass took place in San Francisco in September 1992.

- Organize an Active Transportation Awareness Day, which challenges CCMs to leave their vehicles at home or at least carpool with the desired effect of creating a car-free campus.
- Reduce allowable idling time in the Facilities Management Vehicle Policy from 5 minutes to 10 seconds.
- Limit discretionary air travel by offering incentives to take the bus or train.
- Research worthwhile offset programs in which to participate and include offsets in travel allowances for employees.

Long Term Goals:

- Provide incentives for carpooling including guaranteed emergency rides home and gas subsidies.
- Better publicize and expand Mount Allison's carpooling database to include other Sackville commuters so that the probability of making a match can be improved
- Have a service station on campus for cleaner burning fuels, if the local gas bars do not initiate this.
- "0"missions from university owned vehicles
- Organize a bike rental program or support a student bike co-op and establish a bike repair shop on campus one day per week. The carpentry or metal shop could double as a part-time bike workshop.
- Purchase a fleet of low-emission vehicles that can be signed out conditionally to CCMs. Pursue government funding for this project in lieu of public transportation.
- Substitute lower impact vehicles for conventional vehicles where appropriate.
- Install covers on bike racks so as not to discourage those who are willing to cycle in all weather conditions.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Bike racks are available at academic and residence buildings.	There are 14 bike racks located across campus. Plans for additional bike racks as future construction on campus progresses.	2 additional bike racks will be available in front of the New Student Centre	Support Critical Mass bike rides by organizing an Active Transportation Awareness Day.	Help students establish a bike co-operative and/or bike rental and repair service. Install covered bike racks or redesign current ones.
Emission levels are taken into consideration in the purchase of vehicles.	Emission levels were considered for the only vehicle acquisition since the 2002 audit. Due to heavy work requirements of the vehicle, no hybrid or alternative vehicle was suitable	Emission levels are more of a concern to some department than others. 2 new vehicles have been acquired including a flexible fuel vehicle.	Keep up with vehicle replacement cycles. Purchase low emission vehicles and test drive an ATV on campus. Increase fleet's ability to multitask.	Purchase a zero emissions vehicle, for example, the ZENN. Reduce size of fleet.
Vehicle operators adhere to the Vehicle policy.	The majority of operating procedures are followed by employees. The few problem areas can be resolved with retraining.	Same.	Review, revise, and revive the vehicle policy. Decrease allowable idling time from 5 minutes to 10 seconds.	Catalyze behavioral and operational changes through education and policies.
Status of Mt. A commuter program.	An informal drive board in the Student Centre was used minimally for a brief period of time. While the board still exists it is no longer used.	Mount Allison's Carpooling System was launched in 2005.	Better advertise Mount Allison's Carpooling System.	Include other Sackville commuters in Mount Allison's Carpooling System.

"The waste of plenty is the resource of scarcity."
Thomas Love Peacock

Chapter 8 - Solid Waste

Introduction

We've all heard the 3-Rs (Reduce. Re-use. Recycle) for as far back as we can remember, but in recent years a fourth R has surfaced. RETHINK. Rethinking requires an internal investigation of our behaviours even before diversion methods come into question. It is primarily a question of need since anything procured becomes waste down the road… haste makes waste!

By reducing the amount of waste the university produces, we can cut down on disposal costs, prolong the life of our landfills, and decrease garbage handling workloads. Putting rethinking into practice will mean being more selective in procurement, increasing product life through maintenance, and implementing the 3-Rs more effectively.

A Waste Audit was conducted by 2cg Waste Management Consulting Services in March 2008 to develop a Green Plan for Mount Allison's waste. The Waste Audit included a review and assessment of our current practices (See Section 2.1 for general information) and an analysis of the composition of campus wastes (See Section 3.0).

The Green Plan for Waste sets out general strategies to further reduce, re-use, and finally recycle/compost. Its purpose is to focus the university's efforts to both produce less and better manage its waste. The Waste Audit and Green Plan for Waste will be available for reference online on the Facilities Management Environment webpage as an appendix to the 2008 Environmental Audit.

Highlights from the Waste Audit:

- Main Goal: achieve 10% increase in waste reduction and 70% increase in diversion by January 2009
- Secondary Goals: eliminate single use, non-recyclable (non-biodegradable) containers by 2009 and establish a green Purchasing Policy by 2010

The facts at a glance:

WASWC	Mt. A
• 60% diversion • 30% wet waste recovery • 70% dry waste recovery	• 45% diversion (60% diversion in 2005-2006 when Jennings' wet waste was not landfilled) • 16% contamination of green bags • 24% contamination of blue bags • $100,000 annual spending on waste management • 220 tonnes waste production in 2007

WASWC's Wet/Dry system presents two opportunities to divert (recycle or compost) rather than provide a garbage stream. Their model award-winning facilities are equipped to do intermediate sorting so producers only have to do preliminary sorting. Still, it requires some time and effort for new residents to learn and adjust to this unique system. At all

inaugural "house meetings", members of Eco-Action give a brief but spirited introductory lesson. Faculty and staff primarily live in the county and it is assumed that they have had sorting experience at home.

Audit Evaluation

Indicator 1. There is an effective waste reduction program.

Individual supervisors and departments have shown initiative, but their efforts receive little attention in isolation even though they often end up saving the university money. (See Table 4.1 Overview of Current and Planned Solid Waste Diversion Initiatives).

Indicator 2: The Wet/Dry program is utilized effectively.

The compliance rate (a measure of the degree of necessary resorting at the plant) for Mt. A is approximately 80%.* On average, 15% of wet waste is contaminated with dry waste and 23% of dry waste is contaminated with wet waste, and both streams are contaminated with 1% redeemable containers.

**According to WAWSC, Mt. A's compliance rate is on par with other clients but this statement bears little weight because Mt. A's waste is indistinguishable upon reaching the plant. For this reason, our number tends to be inflated. This figure was calculated by averaging the combined contamination rates at locations across campus sampled by the Waste Audit.*

Buildings with more student traffic tend to have higher rates of waste contamination. The Library, for example, had the worst combined contamination rate (38.2%) followed by Campbell Hall (29.5%); Avard-Dixon fared best (10.7% dry contamination and no wet contamination) (See Section 3.0)!

Sorting is a skill that must be acquired by all campus community members (CCMs) to maximize diversion. Improper sorting of wet waste sent to WASWC, for example, has produced compost contaminated with glass that is unsuitable for most uses. The outside garbage cans are correctly lined with wet bags because one wet item could contaminate a large amount of recyclables in a dry bag, while one dry item in a wet bag does not ruin the wet, it is just one less item that could potentially be recycled.

"It's too complicated!"

The producer is confronted by a smorgasbord of bin styles, streams, labels, and instructions (if any), which sends mixed messages causing improper sorting due to confusion.

Deposit Return Containers

The collection of redeemables is dealt with on a departmental or residential basis with the revenue going to a club/society, charity, or back to the person, residence, or deportment that has made the effort to gather and return them to Wheaton's All-In-One in the Sackville Industrial Park.

ATTENTION: RECYCLERS

DID YOU KNOW??? Wheaton's All in One will come and pick up your redeemables for a deductible of ONLY $5!

Custodians are instructed to place bins in pairs but since they are mobile, they sometimes get dragged out of place by other CCMs for personal convenience. When custodians are emptying bins, they will set them back in place as long as the bins are visible. Nevertheless, academic building custodians finish work at 1PM, allowing the wayward containers to go unnoticed until the next morning.

This fall, Avard-Dixon will be used as a test site for a centralized garbage collection system. The smaller bins inside the classrooms will be removed because it is felt that their current location (at the front of the room, inside doorways) discourages proper sorting during congested class changes. Along the hallways, the eclectic array of bins will be replaced with 1-2 idealized Wet/Dry/redeemable units. The new Student Centre was considered for a second test site but not included in the experiment due to the cost of the units.

Non-conforming Waste

Indicator 3. Furniture is offered for sale or donation prior to disposal.

Older furniture is refurbished, re-circulated, and/or sold. For example, the Jennings Hall chairs are regularly serviced, the Fine Arts Department has adopted furniture from the former Engineering Department, and the school held a large public sale of the contents of Trueman House.

Dump and Donate, which began in May 2007, for residence move-out day diverts reusable goods such as clothing, dry food, personal hygiene products, books, school supplies, and small furniture, from landfill for the benefit of others in need. Items are sorted and collected by the Salvation Army for resale or use in shelter or family crisis programs.

Indicator 4. Construction waste is recycled and re-used whenever possible.

Contractors are responsible for their own waste disposal, but material re-use from a different site or "doggy bagging" leftovers is encouraged. Wooden palettes are recycled. The Purchasing Manager occasionally solicits buyer interest for our cast-offs, but only after Facilities Management determines if anything is of use to them. Unclaimed materials from Plumbing, Grounds Keeping, Carpentry, Windsor Theatre, Fine Arts, and the Owens go to the WASWC landfill. There, any salvageable materials are set aside in a trailer for Habitat for Humanity.

Summary

Human habit is a challenge for any waste reduction strategy. People typically do not want to deal with their garbage, or even know what happens to it, after it is tossed. Although others are paid to deal with this unpleasantness, it makes environmental and economic sense for producers to make an effort to alleviate their workload by reducing consumption, rinsing out/compacting items, or simply aiming for the right bin.
As mentioned earlier, waste reduction strategies are in place, but these efforts and those who facilitate them would benefit from coordination and recognition. What is needed at Mount Allison is a campus-wide campaign that motivates CCMs to minimize waste while fostering a sense of pride and responsibility for a clean campus. If students, staff, and faculty are given the right tools and support, there should be no excuse for improper sorting. With improvements in some areas and the Green Plan for Waste to guide the university to new frontiers, we should be optimistic about the future of Mount Allison's waste management practices.

Goals & Recommendations:

Many of the following goals are informed by the Green Plan for Waste. While all its recommendations should be followed, the more pressing ones are underscored below.

Short Term Goals:

- Self-collect and transfer all of our non-hazardous wastes to the private sector for more management control.
- Make waste reduction a component of the Campus Climate Challenge.
- Brand Wet/Dry/HHW system with consistent, unified messages.
    - Hire a graphic designer or hold a campus-wide design competition to create permanent labels and simplified instructions for the Wet/Dry bins.
- Develop a Communication and Education program directed towards all CCMS, but primarily students by students, as a part of a university-wide waste reduction strategy.
    - Publicize waste diversion goals and opportunities to participate in programs specific to areas of campus.
    - Quantify diversion impacts through a more refined data tracking system for cost and tonnage.
    - Include Wet/dDy instructions in welcome package for new staff/faculty members.

    - Incorporate a dramatic wet/dry presentation into Orientation Week.
    - Advertise the waste paper notepad program and put one in every mailbox in September along with a notice.
- Integrate solid waste management into strategic planning to prevent logistical problems (See Dining Services). *Diversion of wet waste from the Dining Hall alone would get us far towards meeting or even exceeding the New Year's goal set by the Waste Audit as this act alone t is predicted to boost our current rate by up to 25% !*
- Donate deposit returns, except for those from residences, to an environmental fund. Advertise this on recycling bins.
- Help promote grassroots efforts, for example, the Mt. A Buy, Sell & Trade Facebook Group, Mt. A Student Co-op, "Garage Sale" days.
- Develop an inventory of excess furniture and post it on the intranet for departments and other campus organizations to browse through.
- Acquire (buy or rent) a roll-off container for the recycling and transfer of construction wastes in order to participate in WASWC's construction and demolition program, which has a tipping fee of $22/tonne as opposed to $59.95 for mixed loads.
- Have a Dump and Donate bin year round.
- Add dry bins to washrooms.
- Eliminate paper recycling bins which are placed only in select locations around campus.
- Purchase both a dry and wet waste compactor to increase weight distribution per load and decrease the amount of trips to PBS and WASWC.
- Conduct regular garbage audits in a joint effort between Facilities Management and enthusiastic students.

Long Term Goals

- Use the consultant-led waste audit as a springboard for a more comprehensive internal auditing process.
- Eliminate loose bins in both indoor and outdoor public areas and replace them with Wet/Dry/redeemable units.

Seek custodial input as they're primary players in maintaining the success of a waste management system and because forming a separate stream for redeemable containers may require extra labour on their part.

Indicator Summary

Indicator	State of Affairs in 2005	State of Affairs in 2008	Short Term Goal	Long Term Goal
There is an effective waste reduction program.	There is no waste reduction program on campus.	Same.	10 % reduction. Coordinate and publicize existing waste reduction programs.	30% reduction.
The Wet/Dry program is utilized effectively. *(Assessed through educational efforts.)*	The Wet/Dry program has been implemented university wide, eliminating the need for a separate recycling program unless the university is interested in claiming redeemables for financial gain, something that is already in practice in the residences.	Our diversion rate has fallen from 60% to 45% principally as a result of sending Jennings waste to landfill since 2006. Eco-Action continues "Trash Talks" at inaugural House Meetings. Wet/Dry/redeemable units will be pilot-tested Fall 2008.	Regularly measure and publicly chart progress. Better capture Household Hazardous Wastes. 70% diversion. 85% perfect sorting.	100% perfect sorting.
Furniture is offered for sale or donation prior to disposal.	Furniture is stored and either re-used around campus when necessary or put in the university sale.	Dump and Donate diversion program launched May 2007.	Create an inventory of excess furniture and post it on the intranet. Keep a Dump and Donate bin year round.	Further furniture waste reduction.
Construction waste is recycled and re-used as much as possible.	Construction waste is offered to contractors for re-use. Otherwise it is recycled by Fero or Westmorland.	The Waste Audit revealed that most construction waste is actually land filled.	Purchase a roll-off bin and recycle construction waste.	Further construction waste reduction.

"I write down everything I want to remember. That way, instead of spending a lot of time trying to remember what I wrote down, I spend my time looking for the paper I wrote it down on."

Beryl Pfizer

Chapter 9 - Paper Consumption

Introduction

In our high-tech world of PCs and USBs, PDAs and PNGs, paper use should be a thing of the past, right? Yet, despite all these gadgets and gigabytes, one of the most obvious sources of waste on campus is still good old-fashioned paper use. In fact, it seems that for some, an e-mail is just one more thing to print! The Waste Audited conducted in 2008, which sampled garbage from six campus locations, revealed that paper represented 26% of overall waste (2cg, 2008). And, as in the 2005 Environmental Audit, paper use came up as an issue in virtually every one of our interviews. Notwithstanding this high level of concern, there is still no university-wide strategy for paper reduction. While some departments have taken commendable steps to curb their consumption, others are still chronic copiers.

In addition to *how much* paper is being used, it is important to consider *what type* of paper is being purchased. While Mount Allison's paper is recycled through the Wet/Dry system we are not closing the loop by supporting the market for post-consumer paper…recycling, after all, has to be a cycle to work!

Audit Evaluation

Indicator 1. There is an effective program to reduce paper consumption.

There is no campus-wide paper reduction program. That being said, some major steps have been taken within departments to reduce paper use. Most notably, all of the large printers that are controlled by Support Services are now set to double-sided printing as their default setting! Below are some other efforts that are worth mentioning:

- Financial Services has greatly reduced the amount of paper it uses. On May 1, 2008, the department started reimbursing faculty and staff by electronic payment rather than issuing a cheque. Financial Services is working on expanding this process to include payments made to companies as well.
- Currently, Mount Allison employees are paid by direct deposit, again reducing the number of paper cheques issued by the university. The Human Resources department is working with Computing Services on a project to eliminate paper pay statements for the majority of employees. At this point, their target date for implementation is January 1, 2009.
- The library has increasingly been switching over to electronic acquisitions. It now has 30 000 electronic journals as compared with 600 print journals. Many government documents are now acquired in their electronic form and the library recently signed a contract for electronic books! These holdings will soon be accessible through a link from the Library Catalogue.

- Support Services has been looking into potential alternatives to paper course packs; however it must wait for Access Copyright to resolve copyright issues for the digital market before electronic course packs can be seriously considered.
- The bookstore will bind one-sided paper into notepads for campus community members free of charge.
- External Relations is working on putting the *RECORD*, the alumni magazine, online. Currently, hard copies of the magazine, which is printed three times a year, are being sent to 19 000 recipients! The department also uses recycled paper in its publications whenever possible. The new Faculty of Arts and Faculty of Social Sciences flyers are printed on 50% recycled (15% postconsumer content) content FSC certified paper. Although this is a laudable step, the department should also question the necessity of paper publications given that many prospective students use the website as their primary source of information about the university.
- Student Services has been going digital, where possible. The department has been gradually phasing out the hard copy of the Academic Calendar by reducing the number of copies each year. It is considering eventually producing a short pamphlet with key calendar components to replace the full document. Students are encouraged to pay academic fees via online banking and many forms are now available online. In the future, even more forms will be switched over and a new national initiative could soon mean the electronic processing of transcripts.
- The Faculty of Social Sciences keeps annual records of how much is being printed by each department. Monitoring paper use is a good way to determine where reductions are needed.
- Many faculty members have cut down on hand-outs by using WebCT. In 2009, the contract with WebCT expires and Mount Allison will be switching over to a free service called Moodle.

Due in large part to these efforts, the total amount of paper purchased has been decreasing, albeit far too slowly (for a graph of Mount Allison's paper consumption see Appendix 9.1). According to figures from Conservatree (2008), Mount Allison has consumed the equivalent of 1464 trees worth of paper since the last audit.

While any reduction is praiseworthy, Mount Allison still has a long way to go. A comprehensive paper reduction strategy is needed if real cuts are to be made. Such a program should promote cooperation between departments (or a little friendly competition!), include training opportunities, force faculty to readjust standards for student assignments, and enhance communication about the need for paper reduction.

FSC: From forest to shelf!

Under FSC certification, forestry companies are independently audited to ensure that they meet FSC's stringent management standards. However, the FSC commitment goes far beyond the forest. All of the producers along the paper supply chain must also be chain of custody certified. This means that at every stage of manufacturing or distribution, the fibre going into a product is tracked and identified. This system ensures that virgin fibre going into a paper product is from a sustainable source and verifies claims of recycled content.

Indicator 2. The university purchases 100% post-consumer content recycled paper.

Currently, the university uses 100% virgin paper for standard printing and copying. This paper is not Forest Stewardship Council (FSC) or Rainforest Alliance certified.

The university has tested recycled paper with 30% and 100% post consumer content and found it to be unsatisfactory. The paper, which has a less uniform thickness and quality than virgin paper, was causing the high-speed printers in Reprographics to jam. This resulted in large amounts of the more expensive recycled paper being wasted. Reprographics will be getting a new high-speed printer this year which will be able to accommodate a wider range of paper thicknesses and may be more compatible with recycled paper.

To facilitate purchasing and storage, Support Services wanted to maintain a uniform paper type for all of its printers which is why virgin paper is also being used in the convenience printers and copiers, even though they can usually process recycled paper effectively.

Coloured paper, which is available from Reprographics for special projects, typically has 30% post-consumer content and/or is FSC and/or Rainforest Alliance certified.

Goals & Recommendations

Short Term Goals

- Develop a comprehensive paper reduction strategy to educate CCMs about the importance of paper reduction and steps they can take to minimize their impact (such as making applications digital where appropriate, scanning, tiling their print jobs when they are just needed for records, etc.).
- Include in the strategy a policy requiring professors to accept double-sided assignments and exams and electronic assignments.
- Make shorter exam booklets available for students who request additional paper, eliminating the need to distribute full booklets to students who do not require them.
- Ensure that faculty members have adequate assistance to successfully transition from WebCT to Moodle.
- Continue to test different brands of recycled paper when the new high-speed printer arrives. If the recycled paper is still unacceptable in Reprographics, consider purchasing paper with postconsumer content for the convenience and departmental copiers only and switch to FSC certified paper for the high-speed printers.
- When the *RECORD* is placed online, provide the option for alumni to unsubscribe from the hard copy.
- Reevaluate the number of hard copies of the *Argosy* that are being printed and take orders for *7 Mondays* and the *Allisonian* to prevent overprinting.

Long Term Goals

- Look into the possibility of partnering with other institutions in the region to supply a paper mill with the universities' used paper in exchange for a reduced rate on postconsumer content paper.
- Phase out the hard copy of the *RECORD* and Academic Calendar.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goal	Long Term Goal
There is an effective program to reduce paper consumption.	There is no paper waste reduction program.	All printers under the purview of Support Services are set to default to double-sided printing. Departmental efforts have been made to reduce consumption; however there is no campus-wide program.	Work towards a 10% reduction. Establish a reduction program including training, awareness-raising, and revised policies for academic assignments. Rethink the number of copies of the *Argosy*, the *Allisonian*, and *7 Mondays* being printed. Once the *RECORD* is available online, provide the option for recipients to unsubscribe from the hard copy.	30% reduction. Phase out hard copies of the *RECORD* and the Academic Calendar.
The university purchases 100% postconsumer content recycled paper.	Due to a supplier switch, the university is waiting for input before making the decision on whether or not to buy recycled paper. Testing was done in 2004 with 30% postconsumer content paper.	Further testing of recycled paper found the postconsumer content paper to be unsatisfactory.	Continue testing 30% and 100% postconsumer content paper in Reprographics when the new printer arrives. If this is not found to be acceptable, switch to recycled content paper in the low-speed printers and copiers only. Purchase FSC certified paper for the high-speed printers.	Purchase 100% postconsumer content unbleached paper. Look into programs for returning the university's used paper to a paper supplier in exchange for a reduced rate on postconsumer paper.

"As crude a weapon as the cave man's club, the chemical barrage has been hurled against the fabric of life."
Rachel Carson, Silent Spring

Chapter 10 - Hazardous Materials

Introduction

The public is increasingly aware of the relationship between exposure to hazardous materials and environmental and human health. Indeed, human health and environmental wellbeing should not be looked at in isolation. If a substance is determined to adversely affect humans, imagine its impacts on nature's more vulnerable species. Today's markets reflect this increased concern which has driven the availability and quality of green products forward.

Hazardous materials include all toxic chemicals, radioactive materials, and biologic or infectious waste. Generally, when dealing with these substances, we can protect ourselves and our surroundings by complying with regulations and educating ourselves. Manufacturers, instructors, and supervisors are obligated to give their customers, classes, and staff an overview of risks and precautionary measures; however it is ultimately up to the user to apply their understanding. By ensuring that only necessary amounts of hazardous materials are present on campus, dangerous contact can be minimized. Ridding the campus entirely of hazardous materials would be an impediment to experiential learning and, in some cases, reduce the effectiveness of essential products.

At Mount Allison, Science Stores purchases and manages all common chemicals used for academic purposes. Faculty Supervisors purchase specialty chemicals. Distribution on campus is handled by a group of specially trained drivers and technicians. Internationally, the transportation of dangerous goods across borders is regulated by international treaties, with substances requiring a UN tracking number. The Canadian Association of University Business Offices (CAUBO) is helpful in obtaining customs documentation for materials for the diverse range of substances imported by universities.

Chemicals must be clearly labeled and stored appropriately. As space is limited, some of Mount Allison's storage areas (Fine Arts, Chemistry, Carpentry) appear somewhat disorganized. With the completion of new buildings and renovations to existing ones, crowding, concealing, unsound stacking, and overhead storage should be eliminated.

Procedures for the disposal of hazardous materials at Mount Allison are subject to various government regulations. The Science Stores holds the license as a waste collection facility and are responsible to oversee the storage of hazardous materials in its area. Individual faculty members are responsible to oversee the handling of hazardous materials. Previously, annual health and safety audits were performed in the Chemistry and Fine Arts Departments as per provincial regulation but recently this regulation has changed, requiring all NB workplaces to perform a monthly workplace inspection. The Laboratory Manager and Chemistry Health and Safety Officer, Roger Smith, is putting together an evaluation checklist to enable staff to conduct the audit with little additional training in the Fall. Spills are addressed by a qualified spill response team, with the assistance of a spill kit.

Indicator 1. Chemical waste through Science Stores is minimized.

Disposal costs almost double the procurement costs of chemicals, which, provides additional incentive to minimize the production of hazardous waste. Although the materials sent for disposal are from all aspects of the University operation, waste disposal is administered as a line item in the Chemistry budget. In FY 06/07, the annual budget for disposal was roughly $11,500; however, this has been adjusted upward for 2007-08 in anticipation of increased waste production due to the moving of labs and faculty changes.

When a research lab is shut down, its contents are salvaged for re-use by the remaining faculty before ultimate disposal. The recent retirement of a professor whose research required large amounts of solvents will lead to further waste reductions over time.

This department is moving towards automated (dial set) procedures to limit accidents and losses from spills.

Sub-indicator 1. Microscale chemistry is used.
Experiments which use small quantities (mg) of chemical substances, termed microscale chemistry, continue to be conducted in the undergraduate labs.

Sub-indicator 2. Natural solutions are used instead of chemicals where ever possible in Chemistry.
Instead of using chromic acid, which is carcinogenic and mutagenic when inhaled, for cleaning laboratory glassware, soap and water are used at the undergraduate level and water alone is used in most research labs. The popularity of chromic acid has declined worldwide due to concerns over human health, the environment, and interfering residues.

Indicator 2. Effective, environmentally friendly supplies are used.
During the 1970s, middle-aged artists began feeling the effects of years of exposure to hazardous materials in their practice. This realization has prompted today's artists to take additional precautions. Many of Mount Allison's Fine Arts students opt for turpenoid, a less toxic paint solvent than turpentine. While it is a milder chemical, its lack of odour should not fool the user. As with turpentine, studios should still be properly ventilated when painting. Walnut oil was also introduced by a former professor as a natural, but prohibitively expensive, multi-purpose alternative in painting. In printmaking, oil of wintergreen can be substituted for acetone in the photo transfer process, but this is a little known fact. Printer's ink is considered to be "non-toxic" (i.e. if ingested you won't die immediately) as is water soluble silkscreening ink. The department has not switched to soy-based inks because they don't produce the same quality results as conventional inks. Only small amounts of lacquer thinner or colbalt dryer are required and these are usually only available to students upon request. A green photochemical provider has been sourced but not pursued.
Contrary to what was indicated in the last audit, the Fine Arts department has not switched to a non-toxic alternative to the solvent Varsol for cleaning and degreasing. Only during the end-of-semester printmaking clean-up are non-toxic substances used because of the high density of bodies in the studios. Be Green multi-purpose cleaner is offered for those who have adverse reactions to Varsol. This summer, two instructors and one student used Soy Response, a natural solvent, on a trial basis. Their experience revealed that residue is not a concern and that it is an affordable alternative for some tasks when diluted by water 1:1. Still, the department has reduced its Varsol consumption by half a drum per year. An aggressive scraping campaign was launched to remove 99% of ink manually and a parts washer recycles old Varsol to be used for heavy degreasing. New Varsol is only used for finishing. Oily rags are re-used after being cleaned by Canadian Linen.

Mercury thermometers continue to be used because they are more accurate and give a better range than alcohol thermometers. Mercury thermometers work with temperatures upwards of 400°C while alcohol thermometers generally have a range from -20 to 110°C. However, alcohol thermometers can perform most routine laboratory functions and are used in the Sea Lab. Digital measuring devices were deemed cost prohibitive. It should be noted that mercury is present in other apparatuses, for example manometers, which would have the potential for a much more dangerous spill with at least 20 times more mercury!

Custodial Services has been trying its hand at green cleaning. Most of the products used by the department are Green Seal certified cleaners from 3M. Vinegar is also commonly used on windows. However, the department does not exclusively use biodegradable products as indicated in the 2005 audit. A myriad of green bathroom cleaners were tested and found to be ineffective. Some supplies are still pending Green Seal approval while others are MSDS regulated. Klinger, which contains phosphoric acid, is used as a last resort on finished floors and there is no eco-friendly alternative on the market for seldom-used supplies like gum remover or oven cleaner. Where possible an aerosol is replaced by a spray bottle and a spray bottle is replaced by a bucket solution to reduce the amount of air-borne particles.

In 2007, there was an outbreak of bed bugs in Thornton Residence and Braemar Pest Control was contracted for extermination. Chemical sprays and powders are used as a last resort in pest control but inevitably they must be utilized. Whoever is contracted for pest control performs monthly check-ups and responds to emergency infestations as the use of insecticides requires a license from the government. Rodents and insects are poisoned or death trapped, while other animals are live trapped. Jennings' kitchen has fly-trapping machines, which regularly release a human-friendly mist.

Indicator 3. All hazardous wastes are properly monitored and disposed of.

Suppliers comply with WHIMIS guidelines and are responsible for distributing MSDSs when filling a product order for the first time and every three years if the product continues to be ordered. These information sheets are also available for quick reference on most suppliers' websites. Employees who directly handle and/or oversee the distribution of hazardous materials (e.g. instructors, technicians, truck drivers, and managers) are specially trained on-site by a WHIMIS representative.

Marine pollutants have not been quantified and receive little consideration when compared to the amount of research on the effect of pollution on human health and safety. The adverse effects of hazardous materials on aquatic organisms, soil, and water quality are expressed in newer MSDSs under the eco-toxicity section.

Labeling is meticulous because unknown chemicals are useless and not accepted for disposal until identified, which requires rigorous, costly testing. If chemicals are broken into smaller containers "in house", a local label is printed, otherwise original WHIMIS labels are used.

Chemistry
Clean Harbours is the only company of its kind in the Maritimes. Its practices are governed by provincial and federal legislation (See Appendix 10.1). Solvents are sorted into Hydrocarbon and Halogenated wastes. All obsolete chemicals are put into steel drums called lab packs and buffered with vermiculite. There are thirty-three (33) different categories of lab packs e.g. corrosives, acids, bases, oxidizers, etc. which cannot be cross-contaminated. Each drum is labeled with the following information: serial number, weight, ingredients, amount of each component, and dimensions. The method of disposal varies depending on the type of chemical; some need to be incinerated, for example, while others can be treated aqueously and then released into the wastewater system. Even the 20L formally solvent pails must be returned at a cost for fear of residual contamination. Drums are not disposed of until they are

completely full to keep our costs to a minimum. Likewise, anything that comes into contact with hazardous materials that may potentially carry residue such as gloves, drying agents, disposable pipets, and materials used to absorb spills are not disposed of in the Wet/Dry/HHW system.

Broken thermometers account for almost half of the spills on most campuses. At Mount Allison, neither the time nor place of spills are recorded but it was noted that roughly 4 or 5 spills occur each year involving thermometers alone, mostly in first year labs. When used carefully and disposed of properly, health and safety risks involved with mercury thermometers are minimal.

Biology

Empty purpose-made containers are re-used as make-shift sharps (broken glass, razor blades, needles) containers in the Biology department. The student Health Centre sends their sharps containers to Sackville Hospital. Anything that comes into contact with blood or animal tissue (e.g. claws, bones, scalpels) are considered biohazardous sharps because of their ability to cause infection through puncture. Biohazardous waste is bagged and frozen to reduce the risk of contamination. Our business with Stericycle in Moncton who charges a base rate for incineration of sharps has been reduced from monthly to tri/quadrennial visits. The capacity of the freezers was upgraded to compensate accordingly.

Ward's Natural Science in St. Catherine's supplies Mount Allison with animals. All suppliers use formaldehyde, but the only fixative on campus is called Ward Safe. Fetal pigs are locally sourced by the department from a slaughterhouse, if they are to be dissected fresh. The Psychology Department also contributes to this waste stream by experimenting on animals.

Fine Arts

Solvents are emptied into a drum in the painting studio that has been known to overflow because of poorly scheduled service. Printmaking employs diluted nitric acid, pure ounces of nitric acid, tannic acid, acetic acid, and methanol. All acids require the use of a ventilation system and protection, which may include any combinationa of a respirator, goggles, impenetrable apron and gloves. Since 2007, respirators for acids and VOCs have been included in the first year kits. After being used, acids are returned to their original containers for re-use, allowed to evaporate, or neutralized before they are flushed down the drain. All Fine Arts chemicals display a National Fire Protection Association (NFPA) reading either on a floating label or a pasted label depending on the size of the container. However, there is a problem with the pasted labels being covered up over time with inky handprints.

Third year photography students participate in a chemical mixing workshop which covers responsible handling procedures. Although all chemicals used in the development process are dumped down the drain, the stop bath, fixer, and toner are reused until exhausted first. Investigation into a silver recovery program ceased 5-10 years ago because the department didn't produce enough to make it worthwhile at the time.

Facilities Management

Herbicide and pesticide containers are triple rinsed and punctured before disposal. See Grounds Keeping chapter.

The compact fluorescent light bulbs (CFLs) and T-8 light tubes recently installed on campus both contain mercury. For almost a year, containers of burnt out bulbs sat in storage while disposal options were being weighed. As of June 2008, Newalta in Sussex, NB was contracted to dispose of the CFLs. The Grounds Superintendent has submitted a proposal for a bulb eater that will safely crush the tubes.

Asbestos can be found in buildings that were erected in the 60s and 70s. The walls of buildings were sampled to determine its whereabouts. When renovating small areas, workers wear appropriate PPE and follow

regulated procedures. Major renovations are done through contract with a reputable contractor experienced in asbestos removals.

Pool

Harsh disinfectants and sanitizers are no longer a necessary evil in pool maintenance according to Natural Chemistry Canada. In fact, Belgium has banned the use of chlorine from its public pools altogether and other countries are following suit (Green Living Online). When the Athletic Centre is renovated according to the Facilities Master Plan, Facilities has plans to install a saltwater treatment system.

2000L of chlorine is used each year to disinfect the pool. The addition of chlorine lowers pH, which must be reset to the target zone (7.2-7.6pH) with muriatic acid so as not to irritate the swimmer's eyes. Sodium bicarbonate (baking soda) stabilizes the alkalinity (buffering capacity) between 80-100ppm. The privatization of the water treatment plant has improved the Town of Sackville's water quality, on which the pool is dependent, thus reducing the need for Calcium chloride to combat water hardness and its associated problems. Non-hazardous sodium carbonate (soda ash) is also stocked, but its use is limited to leap years when the pool is fully drained and refilled.

The amount of chemicals varies depending on the bather load but on average 10L of chlorine and 8L of muriatic acid are used daily. Bath and body products offset the chemical balance of the pool so users are asked to rinse off in the showers before entering to reduce contamination, although this practice is not strictly adhered to or 100% effective. Waste is not an issue as chemicals are mixed fresh and applied as needed. Atlantic Chemicals delivers supplies to the school in refillable plastic containers.

Sub-indicator 1. Household Hazardous Waste is effectively captured.

Both on and off-campus, Household Hazardous Waste (HHW) e.g. household cleaners, paint, oils, antifreeze, batteries, propane tanks, and aerosol cans which are not empty are dealt with haphazardly. Most HHW bins in residences are neglected. Storing batteries indeterminately is not advisable because of the potential for corrosion and battery acid leaks. Ideally, batteries should be taped in groups to prevent the charges from interacting (See Appendix 10.2). The Waste Audit found a small amount of HHW in the blue bags of Campbell Hall, a representative residence. The WASWC HHW mobile unit comes to Sackville twice a year during times when most students are out-of-town. Other disposal options include taking items directly to the Co-Op, Home Hardware, WASWC, or Wheaton's All-in-One.

Summary

In accordance with the university's Environmental Policy, pesticides are used on campus only when required, micro-scale laboratories are used, and the transportation of all hazardous materials is monitored. There is room for improvement in ensuring that effective, environmentally friendly supplies are used but fulfillment of this indicator is expected to increase as demand climbs, the premium for these products shrinks, and their formulas improve. The new mandatory monthly audits will draw attention to any grey areas. Overall, the university has good practices when it comes to dealings with hazardous materials; after all, this waste stream is heavily regulated by government.

Goals & Recommendations:

Short Term Goals:

- Establish a central location for the collection of HHW on campus for all CCMs to use. This would eliminate any confusion as to where to go for disposal and guarantee that it gets timely transferred to a disposal facility.
- Avoid overfilling and establish a schedule for emptying containers.
- The task of emptying the residence HHW bins should be clearly delegated (Don, custodian, Recycling Rep).
- Further investigate asbestos and mold issues in this chapter.
- Have updated information on alternatives to hazardous materials (pilot test to evaluate whether it's worth the premium) e.g. Lithotine vs. Varsol.

- Use natural solutions beyond Chemistry i.e. baking soda and vinegar for cleaning, walnut oil and Oil of Wintergreen for Fine Arts.
- Keep a good inventory of materials and don't stockpile because the disposal costs exceed the purchase costs by a considerable margin and there's inadequate storage space.
- Dispose of wastes immediately at the completion of a project and don't abandon them for someone to blindly deal with later.

Long Term Goals:

- Salt water treatment system for swimming pool.
- Use monthly government required audits as background to create an online database accessible by all CCMs, which will provide inventor, MSDS, and NFPA information.

Indicator Summary

Indicator	State of Affairs '05	State of Affairs '08	Short Term Goal	Long Term Goal
Chemical wastes are minimized through Science Stores.	Expense of chemicals and their disposal provides incentive to keep wastes minimal.	New surcharges push the department to be innovative in purchasing and storage.	Minimize hazardous wastes on campus through source, hazardous materials. Invest in automated dispensers for chemicals. Only purchase rechargeable batteries.	Eliminate unnecessary waste disposal.
Sub-Indicator: I. Microscale laboratories used.	The microscale method is implemented in the majority of chemistry classes.	Same.	Instill the ideas of /skills for microscale into every student/faculty/staff's thinking.	All appropriate instances utilize the latest techniques in micro-scale chemistry.
II. Natural solutions are used instead of chemicals where ever possible.	Natural solutions are used in some classes	Same.	Substitute with natural solutions whenever possible.	Contribute to research on natural solution.
Effective, environmentally friendly supplies are used.	A few environmentally friendly cleaning supplies are being purchased, but the use of these products is not enforced. Most products are still purchased with price foremost in mind.	Some of our custodial supplies are pending Green Seal certification. Fine Arts is pilot testing a soy-based cleaner to replace Varsol.	Continue purchasing concentrated products. Substitute with less hazardous materials whenever possible.	Use green supplies successfully throughout campus.
All hazardous wastes are properly monitored and disposed of.	There is currently no database that includes all hazardous materials used on campus.	Full monitoring of all hazardous materials on campus will be government regulated and mandatory.	Use the mandatory audits to inform our own system for monitoring use and disposal.	Create a website that details all hazardous materials used on campus and their MSDSs.
Sub-Indicator: I. Household hazardous waste (HHW) is effectively captured.	In 2002, a HHW bin was added to each residence.	HHW bins suffer from neglect and misuse. HHW is contaminating other streams.	Educate on the importance of separating HHW and provide a centralized bin.	Capture 100% of HHW.

"What is a weed? A weed is a plant whose virtues have not yet been discovered."

Ralph Waldo Emerson

Chapter 11 - Grounds Keeping

Introduction

Mount Allison's attractive grounds and distinct campus feel are an important part of the university's image. The atmosphere created by the beautiful variety of plant life adorning the campus matches the personality of the institution itself: welcoming and accepting. What's not immediately apparent, however, are the challenges involved in maintaining this beautiful environment. In all of its grounds-related decisions, Facilities Management must balance the desire to maintain an aesthetically pleasing campus with important environmental and health considerations.

Audit Evaluation

Indicator 1. Pest management is 100% organic.

Mount Allison continues to follow the Integrated Pest Management (IPM) program outlined in the 2005 audit. The IPM is a six step strategy which favours organic methods and calls for spot pesticide spraying only as a last resort. For safety reasons, the sports fields are sprayed as needed.

As mentioned in the last audit, propane powered flamethrowers or wanes were purchased to eliminate weeds in the paved pathways. The propane wanes are still used but as an alternative, Grounds has also added an all-natural horticultural vinegar which is very costly. Neither of these methods is particularly effective in the long term as they only kill the growth and not the root system.

Indicator 2. Yard waste is composted. Yard waste continues to be composted and converted to mulch behind the Fawcett building. The compost and mulch are primarily used by the university when planting trees, shrubs, and flowers.

Indicator 3. The landscape design incorporates native species of plants trees.

Roughly 50% of the trees on campus are native species. However, the heritage of a species is not a primary consideration when selecting varieties for planting. Factors that are given more weight include drought resistance, ability to withstand harsh weather, and susceptibility to disease and parasites. There are also stringent regulations for the transport of trees to limit the spread of plant diseases.

Currently, there is an informal policy followed by the Grounds Keeping Department by which three trees are planted for every tree that is removed from campus. This program could be extended to planting trees off campus (or on other university properties away from the main

campus) once it is determined that the tree cover on the main campus is sufficient.

Water Conservation

Indicator 4. The landscape is designed to be drought resistant.

As indicated in the last audit, landscaping is designed to increase water efficiency. Plant varieties that require little water are chosen and mulch and compost are applied to increase water retention.

Overall, there is little to no irrigation done on campus. Unless the season is particularly dry, the only plants that are watered are trees, flowers, and shrubs in their first year after planting and all annual varieties. Of the sports fields, only the Park St. field is watered regularly. It has a sprinkler that is on a timer and is shut down if there is sufficient rain.

Education

Indicator 5. The grounds are used for educational purposes.

While several classes, especially in the Biology, Fine Arts, Drama, and Geography Departments do take advantage of the grounds, given the size of the campus and the effort by the Facilities Management to maintain it, the property remains underutilized.

The Grounds Superintendant has been working with a professor in the Biology Department to create signage to draw attention to key features, such as trees. Planting a garden in the old MacGregor lot (see Dining Services Chapter) could fulfill the dual role of an educational space for students and food source for the Sustainable Residence.

Indicator 6. Facilities Management communicates their major plans/changes to the university community and allows for questions and feedback.

Notifications by Facilities Management regarding work on campus have been inconsistent. Campus-wide e-mails are typically sent when large trees are being removed from campus; however communication should be improved.

Winter Maintenance

Indicator 7. Salt use is reduced.

Facilities Management uses as little road salt as is safe on campus. In 2007, roughly 40 tonnes of salt were purchased (24 20lb bags of salt and 30.7 metric tonnes of bulk salt). In the entryways to buildings an alternative product is used that is more expensive but creates little dust to be tracked inside the building. The Grounds Superintendant has explored alternatives to salt for campus-wide application, but found them to be economically unviable.

Gas Powered Equipment

Indicator 8. Trim mowing is minimal.

As indicated in the 2005 audit, the use of gas-powered trim mowers on campus is minimized. On the other hand, there continues to be a significant amount of mowing done with the two big diesel powered machines. Overall, two to four employees mow for an average of five hours a day, five days a week. Sports fields are mowed two to three times a week. In the absence of chemical pesticide application, frequent lawn maintenance is necessary to keep weeds in check. Lawns are mowed to a 3in length to allow for the best weed control.

Summary

The Grounds Keeping Department incorporates environmental considerations into its routine operations. With the IMP system, pesticides are only used as a last resort. In addition, three trees are typically planted for every one removed, species are chosen to minimize necessary inputs, and waste from the grounds continues to be converted to mulch and compost. More efforts could also be made to minimize mowing, make the grounds more interactive, and communicate work on the grounds to the campus community.

Goals & Recommendations

Short Term Goals

- Continue posting signage and promoting green spaces on campus for all members of the university community to enjoy.

- Dig a garden on the MacGregor lot as an educational space and food source for the Cuthbertson House Sustainable Residence Initiative (see Dining Services Chapter).
- Develop a sustainable grounds keeping policy to institutionalize such techniques as the IPM, drought-resistant landscaping, and the practice of planting three trees in place of one.
- Send e-mails to the campus community whenever major work is being done on the grounds.
- Reduce mowing on properties that are not being used regularly.

Long Term Goals

- Continue working towards a 100% pesticide free campus. Keep looking into organic pesticides and fertilizers.
- Use the new green spaces in the old Baxter and Sprague lots to showcase native plants with signage identifying the various species.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Pesticides are used on campus only when required.	Mt. A uses a technique called Integrated Pest Management, applying pesticides (on sports fields) as a last resort.	No change.	Continue to explore and test proactive ways to control pests.	Rid Mount Allison of pesticides completely.
Yard waste is composted and used as mulch.	Yard waste is composted on site and used as mulch.	No change.	Continue to compost.	
Native species of plants are incorporated into campus landscape.	Native species are widely planted on campus. Currently about half of the trees on campus are native species.	No change.	Include as many native species of plants as possible while considering other traits such as drought resistance.	Use the Baxter/Sprague lots to showcase native species. Include signage to identify them.
Drought resistant landscaping used.	This technique is being used. Watering is only done on sports fields and on some beds when plants are newly transplanted.	Only the Park St. field is watered regularly. Annuals and other plants in their first year are watered. Drought resistant species are chosen.	Keep up the good work!	
Grounds used as an educational space.	Grounds continues to partner with several departments on campus to use grounds as a laboratory, space for art installations/performances, etc.	Collaboration is ongoing and signage is being installed to encourage use of the grounds.	Continue to encourage both faculty and students to use the grounds. Post signage identifying key features.	Prepare space for a garden on the MacGregor lot for use as an educational tool and food source for the Sustainable Residence.
Grounds Keeping communicates with the campus community	There is no formal system to let the university community know what is being planned by the grounds crew.	E-mail communication is sporadic and mostly deals with tree removal.	Send campus-wide e-mails whenever a major project is being planned. Better communicate efforts.	
Salt use is reduced.	In winter of 2004 a new salt machine was purchased that reduces the amount of salt used on campus by half.	This spreader is still being used and the salt amounts have stayed the same since the last audit.	Continue to explore alternatives to salt.	
Trim mowing is minimal.	Trim mowing has been significantly reduced.	Trim mowing has been reduced, however a considerable amount of mowing continues to be done with diesel machines.	Reduce mowing on properties not being used regularly.	

When one tugs at a single thing in nature, he finds it attached to the rest of the world.

John Muir

Chapter 12 - Environmental Protection

Introduction

No Mount Allison publication would be complete without a snapshot of the serene swan pond or scenic Waterfowl Park. Not only do these environments provide recreational opportunities for campus and community members but they also deliver important ecological services and host a variety of plant and animal species. For example, the Waterfowl Park, although initially human-made, is now home to over 160 bird species and some 200 species of plants. Given the university's proximity to such fragile ecosystems and because these sites are integral to the Mount Allison experience, we have both a responsibility and an interest in protecting them.

At Mount Allison, the likelihood of environmental catastrophe is fairly low. However, this does not mean that the university should not remain vigilant. As in the last audit, the main environmental risk posed by campus operations is in the handling of petroleum products. Of particular concern would be a spill of the main heating tank.

Other environmental risks that are discussed in other chapters include:

- Hazardous chemicals (see the Hazardous Materials chapter)
- Water contamination and backflow (see the Water chapter)

Indicator 1. The reporting system for environmental risks.

As explained in the 2005 Environmental Audit, Mount Allison's approach to environmental risks is based on due diligence and government regulations. No environmental or risk assessments have been conducted for recent Facilities Management projects because these have usually been constructed on previously built up sites (e.g. Campbell Hall, the new Student Centre). However if the university goes ahead with a proposed project to erect a new residence on the King Street lot, an assessment would be conducted and appropriate mitigation measures taken.

A spill reporting procedure is outlined in the Emergency Reporting Section of Mount Allison's current Approval to Operate. According to this document, the university must immediately report any spill to the Department of the Environment and Local Government where:

- "There has been, or is likely to be an unauthorized release of solid, liquid, or gaseous material including wastewater, petroleum or hazardous materials to the environment;
- There has been a violation of the Air Quality Regulation, the Water Quality Regulation or any Approval issued thereunder; or
- A release of a contaminant or contaminants is of such magnitude or period that there is concern for the health or safety of the general public, or there could be significant harm to the environment."

After hours, when the Moncton branch of the Department of Environment and Local Government is closed, Facilities Management reports to the Coast Guard. In the event of a possible leak or spill of the main heating tank, Facilities Management is also required to notify the fire department.

Indicator 2. Risk control procedures.

Facilities Management is currently in the process of drafting a Hazardous Materials Spill Response Policy to better equip its staff to respond to a spill. The Policy defines a "minor" and a "major" spill and outlines separate procedures for both types of incidents. Among other criteria, a major spill is one with the potential to contaminate the environment or that occurs in a common area while a minor spill is completely contained and has little or no potential to reach the environment.

As part of the new policy, spill kits will be developed and maintained by Facilities Management. Spill kits with a capacity of 17L will be kept in the

grounds garbage truck and the security/custodial truck and kits with an absorbent capacity of 215L will be kept in the Grounds Shop and the Heating Plant. A full department set of MSDS sheets will accompany each kit.

If the main heating tank leaks into the surrounding environment, Facilities Management staff members do not handle the cleanup. Depending on the size and nature of the spill, the remediation may be contracted out to a qualified company or undertaken by the oil supplier. If a leak of the main heating tank is suspected, the Department of Environment and Local Government requires that certain tests be administered. Procedures to be followed in the event that a leak is discovered are outlined in the New Brunswick *Petroleum Product Storage and Handling Act*. As dictated by the act, persons charged with the cleanup must arrange for the immediate removal of leaking systems, take all reasonable steps to prevent further leakage, and recover escaped oil and contaminated soil before installing a replacement storage tank or line. The Department of the Environment may also order that affected water be decontaminated.

Indicator 3. Preventative measures for potential risks.
In reality, the risk of a leak of the main heating tank is minimal. The oil tank is double-walled and vacuum sealed. If the tank springs a leak, the vacuum pull is disrupted and an alarm sounds.

The last audit recommended the construction of a dyke surrounding the tank to contain spills and indicated that it had already been established as a future project for Facilities Management; however this has not yet been initiated. While secondary containments are not typically required for double-walled tanks, according to the Eastern Canada Soil and Water Conservation Centre (n.d.) they can provide an extra level of protection, particularly when the tanks are located in a sensitive area. In light of the proximity of the tank to the Waterfowl Park, this additional precaution would not be unwarranted.

Actually, the greatest opportunity for a mishap to occur is at the point of fuel delivery. There is currently a catch box to collect any oil that drips off when the hose is being connected or disconnected. However, the catch box would be ineffective if the delivery person were to drop or lose control of the hose. A more reliable means of ensuring that no oil is spilled during delivery would be to reinforce the handling area with concrete.

Similar measures should be taken at the diesel fuel pump outside of the Grounds Shop. The tank, although double-walled, is not contained in concrete and staff members fill their vehicles over the unprotected grass. It is likely that small amounts of fuel are dripping off the hose and seeping into the ground, a particular concern given that the Grounds Shop is located near a brook that runs directly into the Waterfowl Park.

Indicator 4. Employee training for environmental risk incident.
Facilities Management staff presently receive basic hazard and safety training but this does little to prepare them for the event of a major spill. Once the new policy is in place, all Facilities Management staff will receive basic training in hazardous materials spill response and designated spill responders will receive more in-depth training. Spill

responders include heating plant, electrical and HVAC employees, security and replacement officers, full time Grounds Crew staff and the Grounds truck driver and truck helper, and custodial lead hands.

Short Term Goals

- Install a concrete containment pad under the fuel handling area of the main heating tank.
- Install a secondary containment under the diesel tank at the Grounds Shop and a concrete pad under the fuel handling area to collect drips.
- Complete the Hazardous Materials Spill Response Policy and implement the spill kits and spill response training.

Long Term Goals

- Conduct a risk assessment of the entire campus.
- Construct a dyke around the main heating tank.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
The reporting system for environmental risks.	Yes.	Same.		Conduct a campus-wide risk assessment.
Risk control procedures.	No.	Facilities Management is currently developing a Hazardous Materials Spill Response Policy to better enable its staff to respond to spills. As part of the policy's requirements, spill kits will be kept in the grounds garbage truck, the security/custodial truck, the Grounds Shop, and the Heating Plant.	Put the new policy forward for approval and implement it as soon as possible.	
Preventative measures for potential risks.	No.	Same.	Install concrete in the fuel handling areas of the Heating Plant and Grounds Shop.	Construct a containment dyke for the heating tank and the Grounds Shop's diesel tank.
Employee training for environmental risk incident.	No.	Once the new policy is adopted, basic spill response training will be mandatory for all FM staff and spill responders will receive.		

The Lorax said
"Sir! You are crazy with greed.
There is no one on earth
Who would buy that fool Thneed!"
But the very next minute, a chap came along,
And he thought the Thneed I had knitted was great.
He happily bought it for three ninety-eight
I laughed at the Lorax, "You poor stupid guy!
You never can tell what some people will buy."

Dr. Seuss

Chapter 13 - Procurement

Introduction

Each of us makes difficult purchasing decisions every day. With so many different products out there, a simple trip to the supermarket can be baffling. Should you buy local or organic? Biodegradable or reusable? And what does "natural" really mean anyway? As an individual consumer, it is difficult enough to know which claims to trust. Now imagine that your budget is $15 million and your shopping list includes everything from highlighters to hardware... Welcome to the complex world of university procurement!

Understanding the Procurement Process

Mount Allison's purchasing decisions are made in several ways. When a faculty or staff member wishes to buy a product, he or she submits a Purchase Order Request to the Purchasing Office. The money used to pay for the ordered products is deducted from the department's budget. A purchase order is not required on purchases under $50 or if the staff or faculty member possesses a purchasing card. Purchases made with a purchasing card do not need to be processed by the Purchasing Office, although certain restrictions on their use do apply. Cards have a $1000 limit.

Many products that are bought regularly are handled by standing contracts with supply companies. For example, all office supplies are purchased through Corporate Express. Products bought in large quantities, such as paper, are bought through inter-university tender. Mount Allison is a member of Interuniversity Services Inc. (ISI), a not-for-profit company with nineteen member institutions. ISI acts as a buying group, allowing universities to acquire goods and services "with enhanced value and reduced costs" (ISI, 2008). Some products ordered irregularly or in smaller quantities are not covered by standing contracts and are purchased under short-term contract agreements.

The *NB Public Purchasing Act* requires that the university advertise their intent to purchase at specified thresholds: at $25,000 for goods and over $50,000 for services. Other interprovincial agreements specify a threshold of $100,000 for construction. These contracts are typically secured through either a tender or a request for proposals (RFP) or some

combination of the two. Usually Mount Allison uses a tender for products they have bought before and will be buying again. The RFP process is more flexible and is usually used when a decision cannot be based solely on price.

Although purchases are done under the scrutiny of Financial Services and the Purchasing Manager, purchasing decisions are consistently made by our faculty and staff within the parameters established by the policies created by Financial Services and endorsed by senior management.

Indicator 1. In the purchase of products, the following factors are taken into consideration:

- **Reduced packaging**
- **Recycled content in materials**
- **Reduced consumption**
- **Environmental performance such as energy savings**
- **Construction and longevity (recycled materials rather than virgin materials, PVC)**

Last year, the Purchasing Manager began negotiating with Corporate Express on packaging reduction. Currently, all products are shipped in cardboard boxes through Midland Courier. While these boxes usually do contain recycled material, their use generates a massive amount of waste when you consider that they deliver to Mount Allison alone 2-3 times per week! In other regions, the company has tested sending orders in reusable plastic containers which are returned for future orders. However it was determined that with the complexity of the mailing system at Mount Allison, boxes might get lost along the delivery chain. Corporate Express will accept used cardboard boxes and reuse them up to three times.

Because of the many layers of decision-making involved in the procurement process and variety of factors that must be considered, it is sometimes difficult to place a heavy weight on environmental factors. Nevertheless, once other conditions such as function, quality, and price are met, as much consideration as possible is given to a product's environmental impact when negotiating a contract. For example, specifications for furniture for the new Student Centre included considerable recycled content and the requirement that the company take away the packaging upon delivery. When purchasing carpet, it was specified that only Interface carpet would be purchased.

Green procurement has been aided by the knowledge of consultants and an increase in environmentally-friendly products on the market. In the Atlantic region, however, some contractors are still lagging behind in their knowledge of green purchasing and building. With increased consumer demand, competition will force companies and consultants to get up to speed on ecologically conscious consumption!

From Cradle-to-Cradle: Interface Flooring Systems

The world's largest manufacturer of carpet is on a mission: to eliminate waste by 2020. By 2004, Interface had reduced its land-fill bound waste by two-thirds below the previous decade's levels! Efforts towards "closing the loop" have included the conversion of recycled plastics into carpet backing (instead of using virgin PVC), experimentation with polylactic acid – an organic plastic made from cornstarch, and the use of thermal energy from methane gas in landfills. The company has several LEED certified plants and showrooms and its Entropy line of carpet tiles allows only worn tiles to be replaced instead of the entire carpet (Turner, 2007).

Energy consumption is a major consideration when purchasing new appliances and electronics. Computing Services requests ENERGY STAR® computers and printers and all of the appliances in the new Student Centre are also energy efficient.

In negotiating contracts, priority is given to quality products with long warrantees that will not need to be replaced after a short period of time. In RFPs, different specifications are given different weights and the proposal which has the highest overall "score" is awarded the contract. Environmental considerations can be included in the specifications. When

this is done, they usually receive a lower weight as compared with the weight assigned for price.

Indicator 2. Development of an environmental procurement strategy.

Some environmentally sensitive procurement is already taking place at Mount Allison. However, no official strategy for green procurement has been developed. Furthermore, no environmental requirements have been included in Mount Allison's Purchasing Policy to bring it in line with the Environmental Policy.

As staff, consultants, and contractors gain expertise in green procurement, it is likely that precedents will be set for future buying. For example, the consultants hired for the interior design of the Student Centre will be putting together a guide which will be used to determine minimum environmental specifications for future projects. Nonetheless, it is important that this commitment be institutionalized. Mount Allison should add an environmental clause to the purchasing policy stipulating that recycled, non-toxic, and renewable products be favoured by Financial Services and Purchasing and that they be willing to pay a premium of up to 10% for a green product.

Indicator 3. Faculty and staff are environmentally conscious when making purchasing requests.

Through the Purchase Order Request system, departments have considerable control over which items they purchase. Therefore the onus is on the individual to consider the environmental impacts of the products they are buying. Some departments have been proactive in green procurement. For example, as previously mentioned, Custodial Services has chosen to purchase Green Seal certified cleaning products from 3M.

When selecting office supplies from Corporate Express, faculty may choose from Ecoffice® Products which are flagged with this symbol in their catalogue. →

Currently, these products constitute an average of 20% of the value of Mount Allison's orders. The Purchasing Manager has been encouraging the regional representative to fine-tune the Corporate Express website so that when a staff or faculty member selects a product, a comparable green product is suggested.

In addition to staff and faculty purchasing, the university bookstore has begun to respond to increased student demand for green products. It recently introduced bamboo and soy t-shirts and gym pants, recycled polyester jerseys, and recycled cloth bags branded with the Sustainability MTA logo. To offer an alternative to the white plastic shopping bags which are currently being given to customers, biodegradable plastic bags were purchased.

"There's a danger that consumers see 'eco-friendly' as 'worker-friendly,' and they're not the same thing."
Kevin Thomas, Maquila Solidarity Network

To help guide all purchasing decision-makers, a Green Product Guide should be developed. When a campus community member purchases a high quality and competitively priced green product, information about that product should be added to the guide and made available to other people making purchasing decisions for their departments. The Purchasing Manager should continue to query its current suppliers about green products and communicate available options to faculty and staff.

Another aspect of purchasing that should not be overlooked is the working conditions under which products are made. While an in-depth look into labour conditions is beyond the scope of this report, it is worth noting that when Mount Allison's apparel was moved from the privately run Flying "A" into the bookstore, the suppliers' labour standards were reviewed. Companies with ethical policies or whose products were made in Canada or the USA were favoured. While these efforts are commendable, without a monitoring system to hold companies accountable for their claims there is no guarantee that labour rights violations are not occurring somewhere along the supply chain. To

overcome these disclosure issues, Mount Allison should join the list of 17 Canadian institutions who have implemented No Sweat policies.

Summary

According to Kevin Lyons (2000), Purchasing Managers are the university's "gatekeepers" with the burden of ensuring that anything that gets in the door is environmentally sound. In reality, Mount Allison has multiple gatekeepers, with many faculty and staff making purchasing decisions for their respective departments. While the Purchasing Office has taken steps to include environmental specifications when negotiating contracts and individual CCMs have opted for green products, a comprehensive strategy is needed to bring the entire organization on board. This would involve amending the Purchasing Policy to include environmental and ethical standards and taking steps to inform ourselves about the environmental impacts of the products we are buying.

Goals & Recommendations

Short Term Goals

- Have the Purchasing Manager communicate information to staff and faculty about available green products.
- Consider the full life cycle of all products being purchased. For products that can be recycled or that require special disposal (eg. compact fluorescent light bulbs), negotiate the return of used items to vendors. Similarly, continue to negotiate the return of product packaging as a means of reducing the burden on Mount Allison's waste management system and encouraging suppliers to eliminate excess packaging.
- Continue to work with Corporate Express on packaging reduction and the marketing of Ecoffice® products. Try to establish a system whereby the company will accept used products (pens, paper, etc.) for recycling.
- Query current and potential suppliers about their environmental practices.
- Develop an environmental procurement strategy to green the supply chain. Communicate this strategy to all prospective vendors and contractors and to the entire university community.
- Incorporate an environmental clause into the university's Purchasing Policy. Include the statement that recycled, non-toxic, and renewable products be favoured by Financial Services and Purchasing when they are of comparable quality to their conventional alternative. Also include the stipulation that purchasers be willing to pay a premium of up to 10% for a green product.
- Adopt a No Sweat purchasing policy for garments bearing the Mount Allison logo.

Long Term Goals

- Develop a Green Product Guide to assist those making procurement decisions for their departments.
- Work with other members of ISI to negotiate contracts for green products that are purchased in bulk, for example recycled paper.
- Enhance environmental specifications in contracts by making use of Mount Allison's brainpower. Incorporate the findings of research conducted by university faculty and students from all disciplines into the purchasing process (Lyons, 2000).

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goal	Long Term Goal
Environmental factors are taken into consideration in purchasing.	More consideration is given to these factors, mainly as a result of customers and shareholders demanding higher environmental standards and more accountability from suppliers.	When drafting RFPs, environmental specifications are often included. This has been facilitated by an increase in available green products and the knowledge of consultants.	Continue to work with Corporate Express on packaging reduction and product recycling. Consider the whole life cycle of a product in contract negotiation.	Work with other ISI members on including environmental specifications in contracts for products purchased in bulk. Conduct research to enhance environmental specifications. Make use of internal resources: involve faculty and students in the research.
Development of an environmental procurement strategy.	No environmental procurement strategy exists at this time.	Same.	Develop an environmental procurement strategy. Communicate this strategy to all vendors/contractors and the entire campus community. Amend the Purchasing Policy to bring it in line with the Environmental Policy. Include the stipulation that purchasers be willing to pay a premium of 10% for green products.	Adopt a No Sweat purchasing policy.
Faculty and staff are environmentally conscious when making purchasing requests.	No efforts have been made to improve the environmental consciousness of faculty and staff.	Same. Some staff and faculty members are choosing to order green products, however there is little encouragement to do so.	Work on marketing Ecoffice® products to faculty and staff. Make information on other green products available to those making purchasing decisions.	Develop a Green Product Guide to assist those making procurement decisions for their departments.

"The story of university sustainability is certainly about getting more green buildings and teaching people about the benefits of demand management. But these are only the benefits of demand management. But these are not only the seeds of a revolution. For these seeds to take root and flower, we must address the character of the institutions in which these individuals work, structures of power-over-place that let certain things happen but not others (M'Gonigle & Starke, 2006:144)."

Chapter 14 - Stewardship

Introduction

The 2005 Environmental Audit reported that Mount Allison lacked a clear overarching vision for sustainability. While steps were being taken in many areas to green the campus, these initiatives were fragmented, typically coming from the bottom up rather than from the highest levels of administration.

Three years later, our research suggests that this climate could be changing! After a period of inactivity, the Environmental Issues Committee was reconstituted by Director of Facilities Management, Rob MacCormack. In 2006, Dr. Brad Walters assumed the leadership of the committee and, inspired in large part by the writings of former student Yonatan Strauch, set out to redefine its mandate. Originally tackling specific issues on a case-by-case basis, the committee has evolved towards addressing the underlying problems of governance and stewardship. This reorientation of the committee was met by a receptive audience. With the appointment of Dr. Robert Campbell as university president in 2006, the environment was reaffirmed as an administrative priority for Mount Allison in the university's Strategic Statement.
This chapter attempts to paint a picture of overall campus stewardship, from the grassroots rumblings of student activism where many ambitious ideas are born to the senior administrators who ultimately determine the university's course of action.

Indicator 1. Student environmental concern

Following a lull period, student environmental activism at Mount Allison seems to be resurging.

In 2005, after years in the works, Mount Allison opened the doors of its first Sustainable Residence Initiative. As already mentioned, the house itself is not a green building, as was originally envisioned by the MAUSRI Committee. Instead, students explore sustainable living through their own behaviour, for example by preparing local and organic meals, vermacomposting, and reducing water and energy consumption. Residents also strive to educate the campus and community with workshops, speakers, and roundtable discussions.

In 2006, Mount Allison's Eco-Action joined forces with Université de Moncton's Symbiose to host the first Atlantic Canadian Sustainable Campuses Conference entitled *Building a Culture of Sustainability: Tools for a New Paradigm*. Since then, Eco-Action has also partnered with Facilities Management on a number of high-profile initiatives. In 2007, the Campus Climate Challenge was launched, challenging university residences to compete to reduce their energy consumption for the month of February below the previous year's levels. The event was repeated in March of 2008 and was extended to include water consumption and to involve the academic buildings. Energy savings from the challenge were put towards the purchase of reusable mugs bearing the Sustainability MTA logo for all participants. For next year's competition, it is hoped that residences will be able to monitor their energy and water reductions online.

On October 1st, 2006, the Wet/Dry sorting program became mandatory for Sackville although Mount Allison itself had been using the Wet/Dry program since the spring of 2004. Recognizing that little had been done to prepare the community for the looming deadline, two students, Carolyn Reardon and Jenn Heckman, spearheaded "Trashtalkers". The group distributed Wet/Dry kits and met with students and town residents

to explain how the sorting system works and the benefits of the program. Sackville now boasts an impressive 98% compliance rate, in part due to the efforts of these students.

In 2007, following an eye-opening presentation by journalist Gwynne Dyer, a new student group, DELTA, was born. DELTA is committed to bringing about political action on climate change. Last year, its focal project was a pan-Canadian youth petition committing its signatories to voting with candidates' environmental platforms as a major deciding factor. Other initiatives included awareness raising activities and meet-and-greets with local politicians.

On April 1st 2008, Eco-Action and DELTA collaborated with TEA on Fossil Fools Day, a full day of events including a parade through town, a photo booth where students could send visual messages to politicians, a film showing, an open mic, and eco-trivia at the Pub.

SAC and other student representation at the Environmental Issues Committee meetings have been sporadic. However, SAC President Michael Currie has expressed a commitment to campus sustainability and has declared it a SAC priority for 2008-2009.

Executive Support

Indicator 2. The environment is expressed clearly as a strategic priority in university planning, budgeting, fundraising, recruiting, etc. (Keniry, 1995)

The President's Strategic Statement for the university released in 2007 for the period of 2007-2016 formalized Mount Allison's commitment to the environment. The document identifies the environment as a focus cluster for academics, encouraging departments to incorporate environmental content into their curriculums. The document also implores Facilities Management to establish the environment as a priority goal by working to create a "green campus to high standards" (PEG, 2007:10).

Now, top administrators attend and participate actively in Environmental Issues Committee meetings.

Indicator 3. Senior Administration has shown their support publicly by signing a declaration, such as the Talloires Declaration of Environmental Responsibility (Keniry, 1995)

As mentioned in the 2005 audit, Mount Allison is a party to the New England Governors and Eastern Canadian Premiers *Climate Action Plan* (See Appendix 14.1). However, Mount Allison's Senior Administration has not signed a declaration committing the university to overall environmental responsibility.

Environmental Policy

Indicator 4. A written environmental policy exists to "ensure commitment to ecology survives among competing priorities, limited funds, and perpetual turn-over in campus leadership" (Keniry 1995:190).

Mount Allison University has an Environmental Policy which was adopted in 1999. Changes to the policy were proposed in 2007 to include the promotion of stewardship in the Environmental Issues Committee mandate and to add "Governance" as an area of interest with its own set

of indicators. Another proposed amendment dictates that the committee report to the Vice President Administration. However the newly amended policy has not been presented to the Board of Regents for approval.

Resources and Incentives

Indicator 5. Provisions are available for establishing new programs/initiatives and/or encouraging increased participation in existing ones. (Keniry, 1995)

As at the time of the 2005 audit, there is no official incentive program to encourage people to follow the Environmental Policy.

Commitment Phobia?

Over 350 universities in 40 countries have signed the *Talloires Declaration of Environmental Responsibility* (See Appendix 14.2). Composed in 1990, the Talloires Declaration is a ten-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations, and outreach at colleges and universities (ULSF, 2008). Beginning in 2007, universities in the United States have signed on to the *American Colleges & University Presidents' Climate Commitment*. With more concrete goals than Talloires, the PCC requires that universities complete an emissions inventory, prepare a plan for becoming carbon neutral with target dates and milestones, take immediate steps to reduce GHGs from a list of short-term actions, integrate sustainability into the curriculum, and make the plan, inventory, and progress reports publicly available (PCC, 2008). Following the lead of the American universities, in March of 2008 the presidents of six British Colombia *Universities signed the University and College Presidents' Climate Change Statement of Action for Canada*.

Consistent with the changes to the Strategic Statement, the JUMP Campaign priorities have been reoriented to include the environment as a fundraising priority. The target for environmental projects is roughly $2 million. Although it is unclear at this point which projects will be funded, several ideas have been put forward including academic chair positions, the hiring of a sustainability coordinator, investment in a truly sustainable Sustainable Residence, scholarships and travel bursaries, and internships.

In 2005, donors to the Leadership Mount Allison fund requested that a portion of the money be designated for environmental projects, with the goal of encouraging environmental action and awareness. Preference is given to projects that have both an environmental and an educational component.

Various sources of funding have been made available for the *President's Series on Climate Change & Global Citizenship* as well as the Campus *Carbon 0-Mission Summit*.

The last audit indicated that Facilities Management was looking into hiring an "Energy Coordinator". It had been proposed that the Energy Coordinator would be responsible for overseeing the implementation of the Energy Action Plan and that this person's salary would be drawn from the returns on energy saving projects. However, there was little administrative support for the position at the time.

Facilities Management and the VP Administration have been in dialogue about the possibility of borrowing money from the Capital Assets Fund for environmental projects. Gradually returns from energy and water saving projects, which are typically higher than returns from stock market investments, would be used to pay down the initial expenses. Other campuses have had success with these types of programs. For example, Harvard has a Green Loan Fund which lends interest-free dollars for campus environmental projects. Projects have an average pay back period of three years and an average return on investment of 33% (M'Gonigle & Starke, 1995:145).

Another possibility is that returns from energy saving projects, above and beyond the project costs, be set aside for reinvestment in future projects. At Mount Saint Vincent University, 50% of cost savings go into reserve for future environmental initiatives and UPEI has a similar system. This money

could be set aside in an Environmental Trust Fund. A small fee (in the range of $5-$10) could be applied to student fees which would go into this fund, or towards a specific environmental project chosen by students. To recognize the students' commitment, the university should agree to match the students' contributions.

In 2007, Brad Walters' Contemporary Environmental Issues class surveyed 103 students, 33 faculty members, 18 staff members, and 17 administrators to determine their level of environmental literacy and concern. The survey asked both general questions about climate change and more specific questions about Mount Allison's efforts. When asked if they would be willing to pay a fee to be put towards climate change initiatives, 30% of students indicated "yes" and 44% said "maybe". 22% of staff and 70% of administrators said "yes" (see Appendix 14.3 for select survey results).

Structural Framework

Indicator 6. The university has an environmental committee or task force to enforce the policy and to strengthen future initiatives.

The Environmental Issues Committee was reconstituted in 2005. Its major focus since its reestablishment has been on redefining its mandate and discussing future directions. Its current activities include advising on the *Campus Carbon 0-Mission Summit* and environmental speakers' series and working towards a Carbon Policy for Mount Allison.

In June, 2008, the student auditors and representatives of Facilities Management attended a day-long Atlantic Campus Sustainability Meeting where the groundwork was laid for regional cooperation. Mount Allison will be hosting a second meeting as a lead-up to the *Campus Carbon 0-Mission Summit* in September.

Indicator 7. Sense of Place

"… one can detect a correlation between the intellectual detachment of the academy from the natural world, and its own physical detachment. An insulation is built right into the structure of the university, hard-wired into its physical and intellectual life." (M'Gonigle & Starke, 2005:64).

While some courses do incorporate the local ecology, economy, and history into their coursework, these efforts represent the individual interests of certain professors as opposed to an institutional commitment to regional studies. As indicated in the chapter on Academic Opportunities, local resources such as the Canadian Wildlife Service, the Atlantic Canada Conservation Data Centre, the Tantramar Wetlands Centre, and the Atlantic Wildlife Institute remain underutilized.

Outside of the classroom, there seems to be a lack of engagement between Mount Allison students and the Sackville community. There is also evidence that students do not feel a sense of ownership for campus facilities. Grounds keeping Manager, Andrea Ward, reported that outdoor vandalism is on the rise. It takes an estimated two people, one day per week to clean up student vandalism.

The procurement of local food for the dining hall is a positive step towards reengaging with the university's surroundings and supporting the regional economy.

Public Relations and Documentation

Indicator 8. The university documents programs and their results and publicizes them so that they may benefit others.

Environmental issues at Mount Allison have received some publicity, with university press releases, articles in the *Record*, and local media coverage. However, to date there has been no well thought out plan for communicating environmental programs internally and externally. Some students, staff, and faculty are still unaware of efforts to green the campus. For example, in the survey conducted by Dr. Walters' class, 26% of students surveyed, 42% of faculty, and 28% of staff indicated that they did not know if Mount Allison was taking any action on climate change.

To better tell its story, the university has hired two consultants from Essence Communications to develop a communications plan for

sustainability at Mount Allison. As part of the process, Michelle Strain, Director of Administrative Services, has compiled a list of sustainable practices, campaigns, and research as well as a list of potential future campaigns or projects in progress. In July, the consultants will conduct one-on-one interviews with campus community members as well as group brainstorming sessions to determine how best to publicize past initiatives and which actions to implement in the future.

To further heighten the profile of environmentalism at Mount Allison, a Sustainability MTA logo has been adopted by Administrative Services for use in appropriate publications and promotional items and also to be printed on some items sold at the bookstore.

Leadership Development and Training

Indicator 9. The university invests time and money to offer training programs that foster environmental sensitivity and leadership.

No programs have been offered.

Over the summer, Eco-Action members have partnered with Administrative Services on a campus-wide education campaign to promote environmental stewardship.

Summary

Since the last audit, the environmental agenda at Mount Allison has been imbued with new energy at all levels. Now the challenge for the university is to channel it effectively. To maximize efforts, communication and cooperation need to improve between different areas of campus and between the campus and the broader community. Within the university environment, this could be addressed by creating reporting mechanisms for the EIC, better publicizing the audit, and having parties officially respond to its recommendations. Student and faculty research could enlighten other campus sectors, such as purchasing and facilities. Beyond our borders, partnerships should be solidified to share resources and work towards common goals. Ultimately, a Sustainability Coordinator should be hired to act as a liaison between areas of campus and to oversee the implementation of the goals of the audit and Environmental Policy.

Goals & Recommendations

Short Term Goals

Students

- Student Environmental Issues Committee members should attend consistently. The SAC President or a designated SAC representative should be present at all meetings.
- Have the SAC make a commitment to environmental stewardship on behalf of the student body. This could take the form of a signed declaration or a pledge at graduation such as the Graduation Pledge of Social and Environmental Responsibility (see http://www.graduationpledge.org/). As part of the commitment, the SAC should propose a $5-$10 student fee to be put into an Environmental Trust Fund or towards a designated environmental project. Have the university match students' contributions.
- Use peer pressure to promote environmental stewardship. For example, Eco-Action or another group could distribute prizes to campus community members who have demonstrated environmental consciousness.

Environmental Issues Committee

- Have the proposed amendments to the Environmental Policy put to the Board of Regents for approval.
- Continue to use the EIC as a forum for enhancing dialogue between different university stakeholders.
- Establish a reporting system for the Environmental Issues Committee, including annual reports to the university community.

Administrators

- Show Senior Administration's commitment to environmental stewardship by endorsing a declaration, such as the Talloires Declaration.

- Continue to make funding available for environmental initiatives. Borrow from the Capital Assets Fund for major environmental projects. After the project is paid off, put a portion of energy and water savings from the project into an Environmental Trust Fund.
- Place a suggestion box on campus for students, staff, and faculty, to pitch their ideas for environmental projects on campus. Implement deserving projects and recognize the contributor.
- Identify, initiate, and join partnerships that are advantageous to the university and help it implement the Environmental Policy. Partnerships could take the form of student internships, collaboration on teaching and research, shared office space, etc. Specifically reach out to the Tantramar Regional High School, the Atlantic Wildlife Institute, the Canadian Wildlife Service, the Tantramar Wetlands Centre, and the Atlantic Canada Conservation Data Centre.
- Include the statement "all students upon graduating will possess the knowledge, skills, and values to work towards an environmentally sustainable future" (*Blueprint for a Green Campus*) in the university's mission statement.
- Hire a Sustainability Coordinator to oversee the implementation of the Environmental Policy and audit recommendations.
- Have appropriate departments (Administration, Facilities Management, Academic Faculties) officially respond to audit recommendations that concern them.
- Following the publication of the audit, have the Sustainability Coordinator work with students to realize the recommendations. Departments should be brought together for education sessions and focus groups to discuss simple ways to promote stewardship on campus.
- Raise awareness about the costs associated with student vandalism on campus.
- Ensure that the new communications program accurately reflects Mount Allison's environmental initiatives and that we continue to "walk the talk". Recognize deserving achievements but avoid "greenwashing"!

Long Term Goals

- Develop a Centre for Sustainability which would house an office of sustainability and the Geography and Environment Department as well as serving as a meeting space for student environmental groups. The centre could also lease office spaces to regional environmental organizations.
- Work with other universities in the Atlantic region on making it a sustainable campuses hub. Possible future steps include the adoption of a uniform environmental auditing framework and cooperating on green purchasing.

Indicator Summary

Indicator	State of Affairs 2005	State of Affairs 2008	Short Term Goals	Long Term Goals
Student environmental concern.	N/A	Student environmental activism has been resurging. SAC and other student representation at Environmental Issues Committee Meetings have been inconsistent.	Improve student participation in the EIC. The SAC should make a commitment to environmental responsibility on behalf of students and propose a $5-$10 fee to be put towards environmental projects. The university should match students' contributions.	
The environment is expressed clearly as a strategic priority in university planning, budgeting, fundraising, recruiting, etc.	Mount Allison lacks a clear overarching vision for campus sustainability.	The Environment has been included as a pillar in the President's Strategic Statement, released in 2007.	Officially respond to audit recommendations.	Work with other universities in the Atlantic provinces on the development of regional priorities.
Senior Administration has shown their support publicly by signing a declaration, such as the Talloires Declaration of Environmental Responsibility.	Mount Allison has shown its support for the New England Governors and Eastern Canadian Premiers Climate Action Plan but has not signed onto the Talloires Declaration. .	Same.	Sign the Talloires declaration or a similar agreement.	
A written environmental policy exists to "ensure commitment to ecology survives among competing priorities, limited funds, and perpetual turn-over in campus leadership"	Mount Allison has an Environmental Policy which was adopted in 1999; however it is in need of updating.	Amendments to the Environmental Policy have been proposed but not presented to the Board of Regents for approval.	Put the new amendments to the Board of Regents for approval.	Continue to review the Environmental Policy regularly and work towards implementing it.
Provisions are available for establishing new programs/initiatives and/or encouraging increased	There are no incentives for people to follow the Environmental Policy. Facilities Management is in	No Energy Coordinator has been hired. Funding has been made available for the conference	Hire a Sustainability Coordinator. Create an Environmental Trust Fund. Put a portion of	Develop a Centre for Sustainability which would house an office of sustainability and the

participation in existing ones.	the process of looking at candidates for the position of "Energy Coordinator".	and speakers' series. A portion of Leadership Mount Allison funding is reserved for environmental projects. Borrowing from Capital Assets for green projects is being considered.	energy and water savings from construction projects into the fund for reinvestment in future environmental projects. The student environmental fee can be put into this fund.	Geography and Environment Department and serve as a meeting space for student environmental groups.
The university has en environmental committee or task force to enforce the policy and to strengthen future initiatives.	Mount Allison's Environmental Issues Committee is inactive.	The EIC was reconstituted in 2005 and has been redefining its mandate. Major projects include the development of a Carbon Policy for Mount Allison.	Develop a reporting system for the EIC, including annual progress reports to the campus community. Continue using the EIC to enhance intra-university dialogue.	
Sense of Place	Some classes incorporate local content; however there is no formal commitment to regional studies.	Same. Vandalism continues to be a problem on campus.	Stop vandalizing! Raise awareness about the costs associated with student vandalism.	Build partnerships with local organizations and continue to incorporate regional content into curriculum.
The university documents programs and their results and publicizes them so that they may benefit others.	The university does document large programs.	Same. Mount Allison has hired Essence Communications to develop a communications strategy with input from CCMs.	Ensure that Mount Allison's efforts are being accurately represented and that Mount Allison continues to "walk the talk". Avoid greenwashing!	
The university invests time and money to offer training programs that foster environmental sensitivity and leadership.	No training programs exist.	Same. Students and Administrative Services have started working together on a campus-wide educational campaign to promote stewardship.	Have the Sustainability Coordinator work with students to realize audit recommendations. Bring departments together for education and brainstorming sessions.	

In 1961the isotope carbon-12 was selected to replace oxygen as the standard from which atomic masses of all other nuclides of elements are measured; its mass number is 12. This relates to the wide-spread concern over the formation of Greenhouse gases on the planet, of which the most infamous is CO2.

Overall, we need better reporting and recordkeeping to keep the Environmental Audit a valuable resource and prevent it from turning into a tedious exercise. More files need to be passed on between auditing teams to limit redundancy so that more time can be spent on the vital analyses and interpretation of the findings. However, we are blessed to have a high degree of interest and cooperation in this project across campus.

Top 12 Recommendations

- Consistent messages for the Wet/Dry sorting system—always having both bins side-by-side and having them well labeled.
- Adopt a green purchasing policy that takes into account the whole life cycle of a product (materials, processing, disposal, and packaging). Educate CCMs and vendors accordingly.
- Adopt a food policy which redefines local, includes sustainable seafood, and takes into consideration other issues (organic, animal treatment, packaging, and seasonality even when it is not local, etc.). Serve one local and organic meal a month in Jennings Hall to prove that it is possible!
- Adopt a carbon policy with emissions targets and work towards carbon neutrality (offsets for travel, low emission fleet, extend carpooling program, investment in renewable energy, go for LEED or LEED equivalency, implement energy management plan, etc.).
- Establish an Environmental Trust Fund consisting of student contributions, deposits from recycling, money collected from coffee cup/plastic bag surcharges, etc.) for an environmental project.
- Borrow from the Capital Assets Fund to implement projects to reduce energy. Establish a Deferred Maintenance Fund with the money saved by reducing consumption from these projects. After the Captial Assets Fund has been repaid, use the fund to put towards future water/energy saving renovations.
- Use grey water whenever possible.
- Get recycled paper.
- Renovate the sustainable residence (or build a new one) and install a garden as a food source and educational space.
- Hire a Sustainability Coordinator & follow up on audit recommendations (responding, focus groups, etc.). Don't let history repeat itself!
- Educate the masses! Think outside of academic boxes and show support for an interdisciplinary environmental chair position, shared curricular development, hybrid degrees, collaborations, internships, etc. Let people know (both internal and external) about all that is happening on the environmental front and don't let any student walk away with a degree without having literary in environmental issues.
- Cooperate: Work together to achieve common goals! (with departments, other universities in ISI and Atlantic Canada, the Town of Sackville, regional organizations, etc.).

Conclusion

A reading of this audit should reveal that Mount Allison is taking many steps to incorporate sustainability into its daily operations. When food is purchased for the dining hall, Dining Services considers how many miles it must travel from farm to plate. When new buildings are built, or old ones renovated, Facilities Management installs new efficient technologies. When weeds rear their heads in unwanted places, Grounds' first response is organic pest control. These steps, while seemingly isolated, reflect an important evolution in the culture of our institution towards doing sustainability naturally. The individual efforts of campus community members, however small, should therefore be recognized and more should be done to educate CCMs about actions they can take.

That being said, an overemphasis on these individual steps has the potential to detract from the bigger picture. It bears repeating that one full jumbo jet tank consumes enough fuel to drive the average car around the world four times. While our pedestrian campus is admirable, we should not forget that our students, staff, and faculty, travel to increasingly global destinations. Better insulation is an important first step but let's not forget that there are costs (energy, time, money) to extract and refine these synthetic materials while passive solar design is relatively free.

Climate change is compelling us to take a more proactive stance. Instead of merely replacing broken fixtures with energy efficient ones, why not replace them all now? Instead of waiting for oil to become unaffordable, why not move towards alternatives?

Of course, this will also demand that we be more farsighted as an institution. Budgeting on a year-by-year basis can fail to account for the long term benefits of investing in environmental sustainability. It is our recommendation that the university borrow from the capital assets fund for major energy savings projects. In addition, an environmental fund should be established with savings from reduced energy and water consumption as well as a student contribution.

The Environmental Issues Committee has already sown the seeds of change, by opening a dialogue for a university carbon policy. Mount Allison should keep this momentum going by joining the ranks of many other North American Universities that have established concrete emissions reduction targets with the ultimate goal of becoming carbon neutral. To guide the university's efforts and to enhance communication between departments, a sustainability coordinator should be hired.

As a small institution with a history and reputation for environmental commitment, Mount Allison has the potential to emerge as a real leader. With its strategic location, it is also positioned to form valuable partnerships with local organizations and help to catalyze a movement among Atlantic Canadian institutions.

For more information please refer to the 2008 Green Action Plan that details what we consider to be the 12 most imperative recommendations or See-12 (Carbon-12) at the back of this report. In addition, all Environmental Audits (est. 1998) conducted by Mount Allison are posted on the Environment MTA homepage http://www.mta.ca/environment/ for quick reference and paperless sharing.

Sources Cited

Cover
Photos from the External Relations Department

Academic Opportunities
Persons Interviewed
Paul Berry, Commerce Department Head, May 30, 2008
Dr. Paul Bogaard, Philosophy, May 20, 2008
Dr. Michael Fox, Geography & Environment Department Head, May 23, 2008
Dr. Stephen McClatchie, VP Academic & Research, July 7, 2008
Dr. Jeff Ollerhead, Dean of Science, June 10, 2008
Dr. Frank Strain, Professor of Economics & IR Programme Coordinator, May 21, 2008
Dr. Robert Summeby-Murray, Dean of Social Sciences, May 16, 2008
Dr. Hans vanderLeest, Dean of Arts, June 10, 2008
Dr. Brad Walters, Environmental Studies Programme Coordinator, May 15, 2008

Works Cited
President's Executive Group. (2007). *Mount Allison University: A strategic statement for 2007-2016*. Retrieved June 1, 2008, from http://www.mta.ca/governance/president/thestrategicstatement.pdf
St. Francis Xavier University. (2008). *2008-2009 Academic Calendar*. Retrieved May 20, 2008, from http://www.stfx.ca/calendar/2008-2009_Calendar.pdf
Suzuki, D. (2008). Environmentalism and the responsibility of academia. *Academic Matters*, April 2008, 5-8.
UPEI. (2005). *Campus Sustainability Audit 2005*.
UPEI. (2008). *UPEI Calendar*. Retrieved May 20, 2008, from http://www.upei.ca/registrar/calendar_toc#academicprograms
Photo of Mount Uniacke from Dr. Michael Fox

Dining Services
Persons Interviewed
Theresa Richard, ACORN, June 20, 2008
Brian Slemming, Director of Dining Services and Stuart MacDonald, Assistant Director, June 5, 2008
Michelle Strain, Director of Administrative Services, May 29, 2008

Works Cited
2cg Waste Management Consulting Services. (March 2008). *Mount Allison University Waste Audit and Green Plan for Wastes*.

Photo of the vegetarian station from the External Relations Department
Photo of the pulper from the 2cg Waste Audit

Water Use

Persons Interviewed
Perry Eldridge, Technical Services Manager, June 11, 2008
Gary Fox, Veolia Water, July 22, 2008
George Woodburn, Town of Sackville Engineer, July 9, 2008
Photo of Veolia tour from Vanessa Yu

New Buildings and Renovations

Persons Interviewed
Ron Eickholt, Project Manager, July 2, 2008.
Rob MacCormack, Facilities Management Director, at infinitum.
Alix Mann, Facilities Requirement Manager, July 4, 2008.
David Stewart, Vice-President, June 25, 2008.

Works Cited

Adams, Matt (2008, March/April). Transitioning to Planned Maintenance. *Facilities Manager*, 54-5.

Browning, William D. (2008). Successful Strategies for Planning a Green Building. In Walter Simpson (Ed.), *The Green Campus: Meeting the Challenge of Environmental Sustainability* (pp. 143-156). Alexandria, VA: APPA.

Canadian Green Building Council. CaGBC Introductary Presentation. Retrieved, August 11, 2008, from http://www.cagbc.org/cagbc/index/articles65.php

Dixon, Thompson, & van Bakel, Serena. (1995). *A Practical Introduction to Environmental Management on Canadian Campuses.* Ottawa: Canadian Cataloguing in Publication Data.

Folsom, Kevin (2008, May/June). sustainable facilities vs. Sustainable Facilities. *Facilities Manager*, 49-51.

Wilson, Alex. (2008). Making the Case for Green Building: Cataloging the Benefits of Environmentally Responsible Design and Construction. In Walter Simpson (Ed.), *The Green Campus: Meeting the Challenge of Environmental Sustainability* (pp. 135- 142). Alexandria, VA: APPA.

Photos of Rob MacCormark, empty MacGregor lot, and construction site from Vanessa Yu

Energy

Person Interviewed
Perry Eldridge, Technical Services Manager, June 11, 2008

Works Cited

NB power http://www.nbpower.com/en/commitment/environment/report/report.aspx

Photo of students from Eco Action

Air Emissions

Persons Interviewed
Perry Eldridge, Technical Services Manager, June 11, 2008
Andrea Ward, Grounds Manager, June 12, 2008
Robert Inglis, Controller – email correspondance
Michelle Strain, Director of Administrative Services– email correspondance

Resource used
Clean air-Cool planet Carbon Emissions Calculator (Modified by the Sierra Youth Collation, to fit Canadian needs, 2004)

Works Cited
David Suzuki foundation – www.davidsuzuki.org
http://www.davidsuzuki.org/Climate_Change/What_You_Can_Do/carbon_neutral.asp?source=WhatYouCanDo
Photo of smokestack from 2005 Auditors

Transportation

Persons Interviewed
Perry Eldridge, Technical Services Manager, June 25, 2008.
Matt Sheridan-Jonah, Admissions Manager, July 3, 2008.
Cindy Spicer, Coastal Wetlands Institute Technician, June 18, 2008.
Carla VanBeselaere, Economics Professor, June 17, 2008.
Judith VanRooyen, Bookstore & Departmental Support Services Manager, July 14, 2008.
Andrea Ward, Grounds Superintendent, June 4, 2008.
Paula McCloskey, Town of Sackville Parks and Recreation – email correspondance
Jon Parsons, Associate Registrar – email correspondance
Carolyn Richards, Accounts Payable Clerk / Receptionist – email correspondance

Resources used
Alternative Fuels and Advanced Vehicles Data Centre
CBC Online http://www.cbc.ca/canada/new-brunswick/story/2008/06/06/nb-tax-law.html
Flex Fuel Vs. Hybrid –A Tale of Two Technologies http://www.wgal.com/automotive/9543484/detail.html
Official Parking Policy, Mt. A Policy #7903-Vehicle Operations
Toor, Will. (2008). The Road Less Traveled: Sustainable Transportation on Campus. In Walter Simpson (Ed.), *The Green Campus: Meeting the Challenge of Environmental Sustainability* (pp. 245-262). Alexandria, VA: APPA.

United States Department of Energy, Energy Efficiency, and Renewable Energy & United States Environmental Protection Agency http://www.fueleconomy.gov/feg/flextech.shtml
Who Killed the Electric Car http://www.sonyclassics.com/whokilledtheelectriccar/
Photo of Mark Payne on bike from Vanessa Yu
MTA Carpool Logo courtesy of Carla VanBeselaere

Solid Waste

Persons Interviewed
Laura Brown, WASWC Public Relations, June 9, 2008.
Audrey Kenny, Custodial Manager, June 11, 2008.
Bruce Phinney, Town Counselor, WASWC's Board Member, Sackville Representative,
Michelle Strain, Director of Administrative Services, May 29, 2008.
Andrea Ward, Grounds Superintendent, June 12, 2008.

Work Cited
2cg Waste Management Consulting Services. (March 2008). *Mount Allison University Waste Audit and Green Plan for Wastes.*
Photo of auditors from Rob MacCormack
Photos of bins and confused Tyler from Vanessa Yu

Paper Consumption

Persons Interviewed
Robert Inglis, Controller, July 16, 2008 (e-mail correspondence)
Darelene Estabrooks, Social Science Office Supervisor, May 23, 2008 (e-mail correspondence)
Jocelyn Ollerhead, Associate Registrar, July 17, 2008 (e-mail correspondence)
Ron Sutherland, Director of Human Resources, July 16, 2008 (e-mail correspondence)
Judy VanRooyen, Support Services Manager, July 14, 2008

Works Cited
Conservatree. (2008). *Trees into paper*. Retrieved July 15, 2008, from http://www.conservatree.com/learn/EnvirolssuesTreeStats.shtml
Forest Stewardship Council. (2008). *Why FSC?* Retrieved July 15, 2008, from http://www.fsccanada.org/whyfsc.htm
Photo of Tyler behind Rob's desk from Vanessa Yu

Hazardous Materials

Persons Interviewed
Wayne Anderson, Biology and Biochemistry Technician/Instructor, May 28, 2008.
Wendell Richards, Carpentry Manager, June 17, 2008.

Paul Del Motte, Windsor Theatre Production Manager, June 4, 2008.
Stephen Duffy & Roger Smith, Chemistry Head & Laboratory Manager, May 20, 2008.
Audrey Kenny, Custodial Manager, June 11, 2008.
Thaddeus, Holownia, Fine Arts Head,
Dan Steeves, Printmaking Technician/Instructor, May 20, 2008.
John Peters, Pool Administrator, May 21, 2008.

Resource used
Clean Harbors http://www.cleanharbors.com/browse_by_service/chemical_packing/custompack_self_pack_program.html

Work Cited
Green Living Online. *The Healthy Swimming Pool*. Retrieved May 20, 2008, from
http://ca.lifestyle.yahoo.com/home-garden/articles/green-tips/greenliving/homegarden--the_healthy_swimming_pool
Green Seal. (2006). Green Seal environmental standard for general-purpose, bathroom, glass, and carpet cleaners used for industrial and institutional purposes. Retrieved July 12, 2008 from
http://www.greenseal.org/certification/standards/industrial_institutional_cleaners_general_bathroom_glass_carpet_GS_37.pdf
Photo of lab from External Relations Department

Grounds Keeping
Person Interviewed
Andrea Ward. Grounds Manager, June 12, 2008

Photo of mowed field from Vanessa Yu

Environmental Protection
Persons Interviewed
Perry Eldridge, Technical Services Manager, June 25, 2008
Rob MacCormack, Head of Facilities Management, July 14, 2008

Works Cited
Eastern Canada Soil and Water Conservation Centre. (n.d.). *Petroleum storage*. Retrieved July 14, 2008, from
http://www4.agr.gc.ca/resources/prod/doc/pfra/pdf/Petroleum-e.pdf
Province of New Brunswick. (1987). *Petroleum product storage and handling regulation – clean environment act*. Retrieved July 14, 2008, from
http://www.gnb.ca/0062/regs/87-97.htm
Photo of the boiler room from Perry Eldridge

Procurement

Persons Interviewed

Dale Creelman, Purchasing Manager, July 9, 2008
Alix Mann, Facilities Requirements Manager, July 2, 1008
Judy VanRooyen, Support Services Manager, July 14, 2008

Works Cited

Corporate Express. (2008). *A day in the life of an order*. Retrieved July 9, 2008, from http://www.corporateexpress.ca/en/company-info/quality-commitment.asp
Interuniversity Services Inc. (2008). *About ISI*. Retrieved July 10, 2008, from http://www.interuniversity.ns.ca/about.php
Lyons, K. (2000). *Buying for the future: Contract management and the environmental challenge*. London, UK: Pluto Press.
Turner, C. (2007). *The geography of hope: A tour of the world we need*. Random House Canada.
Photo of the Save Easy from Julie McManaman

Stewardship

Persons Interviewed

Sheila Blagrave, Director of Marketing and Communications, July 8, 2008
Dr. Brad Walters, Environmental Studies Programme Coordinator, June 23, 2008
Dr. Michael Fox, Geography and Environment Department Head, May 23, 2008
Dr. Robert Campbell, University President, June 5, 2008
Michael Currie, SAC President, Marianne Greene, Past SAC President, and Mark Brister, SAC VP External, June 6, 2008
Matt Sheradin-Jonah, Manager of Admissions, July 3, 2008
Michelle Strain, Director of Administrative Services, May 29, 2008
David Stewart, VP Administration, June 25, 2008
Andrea Ward, Grounds Manager, June 27, 2008 (e-mail correspondence)

Works Cited

American College & University Presidents Climate Commitment. (2008). American College & University Pr http://www.presidentsclimatecommitment.org/html/commitment.php
M'Gonigle, M. & Starke, J. (2006). *Planet U: Sustaining the world, reinventing the university*. Gabriola Island, BC, Canada: New Society Publishers.
Keniry, J. (1995). *Ecodemia: Campus environmental stewardship at the turn of the 21st century*. Washington, D.C., USA: National Wildlife Federation.
University Leaders for a Sustainable Future. (2008). *Programs {Talloires Declaration}*. Retrieved June 3, 2008, from http://www.ulsf.org/programs_talloires.html
Photo of Fossil Fools Day from Sue Seaborn

Appendices

Appendix 1.1
Environmental Speakers 2005-2008

2007-2008

- Gwynne Dyer, Canadian journalist and international affairs analyst, "Climate Wars"
- *The New North America Conference*, "Energy and Climate Change in North America", a roundtable discussion featuring Jeffrey Simpson (national affairs columnist with *The Globe and Mail*), Dr. Michael Fox, Dr. Brad Walters, David Coon (Conservation Council of New Brunswick), and DELTA
- David Levy, astronomer and writer
- ATLIS Conference *Creating the Global Commons: Responses to the Environmental Challenge*, featuring a keynote address by Grainne Ryder, Probe International
- Murray Elston, President & CEO, Canadian Nuclear Association
- Dr. Andrew P. Vayda, Professor Emeritus of Anthropology and Ecology, Rutgers University and Senior Research Associate of the Center for International Forestry Research in Bogor, Indonesia
- Discussion on nuclear energy at the Sustainable Residence, Dr. David Fleming and Toby Couture
- Dr. John Raven, Boyd-Baxter professor of biology in the School of Life Sciences Research Biocentre at the University of Dundee in Scotland, "Anthropogenic Acidification of the Ocean"
- Meet and greet with Beauséjour candidates, hosted by DELTA
- Dr. Keith Child, "Agrofuels and Protest: Lessons from Uganda's Mabira Forest Giveaway"
- Falls Brook Centre, presentations on sustainable community planning
- Lloyd Axworthy, former Minister of Foreign Affairs and President of the University of Winnepeg, "Duty to Protect," a discussion of Canada's role in Afghanistan

2006-2007

- Dr. Bruce Mitchell, University of Waterloo, "Backing Into the Future: Reflections on Water Management Experiences in Canada"
- Sustainable Residence solar oven baking workshop and "Wildroots" herbal workshop

2005-2006

- Dr. David Suzuki
- *Building a Culture of Sustainability: Tools for a New Paradigm*, Atlantic Canadian Sustainable Campuses Conference hosted by Eco-Action and Université de Moncton's Symbiose
- Carriage House Sustainable Residence workshops on recycled book-making, reusable menstrual products, biodiesel and community planning
- The Otesha Project bike tour

Appendix 1.2 - Faculty Environmental Research

- Zoe Finkel (Geography and Environment) - Oceanographic research on climate change, marine biogeochemistry, marine macroecology and macroevolution
- Colin Laroque (Geography and Environment) - Dendrochronological research (tree ring analysis) of past climates and forest ecosystems in Labrador, Atlantic Canada and the Canadian Rockies
- David Lieske (Geography and Environment) - Conservation biogeography, with emphasis on the application of spatial information technologies (e.g., GIS data, remote sensing imagery) to assist in conservation planning
- Jeff Ollerhead (Geography and Environment) - Coastal geomorphology of Atlantic Canada
- Brad Walters (Geography and Environment) - Interactions between people and tropical forests in the Caribbean and Philippines
- Mike Fox (Geography and Environment) - Environmental education and municipal environmental planning
- Carla VanBeselaere (Economics) - Environmental behaviour, information and attitude Studies
- Frank Strain (Economics) - Acid rain mitigation policy, contingent valuation of water quality
- Felix Baerlocher (Biology) - Ecology of aquatic fungi, effects of human-induced changes on ecosystem functions performed by fungi
- Jennifer Baltzer (Biology) - Ecology and environmental physiology of tropical and temperate tree species
- Suzie Currie (Biology) - Fish responses to environmental contaminants
- Doug Campbell (Biology) - Molecular ecophysiology of cyanobacteria, cyanolichens, and phytoplankton
- Diana Hamilton (Biology) - Ecology of shorebirds, waterfowl, and their coastal habitats; salt marsh restoration
- Irena Kaczmarska (Biology) - Evolution of diatoms and the spread of invasive microalgae through ballast water
- Stephen Duffy (Chemistry) – Environmental analytical chemistry - structural characterization of humic Substances
- Andrew Irwin (Mathematics and Computer Science) - Theoretical and applied problems in evolution and ecology
- Ralf Bruening (Physics) - Design and creation of energy-efficient glazings for windows
- David Fleming (Physics) - In-vivo detection techniques for environmental toxins like lead, arsenic, etc.
- Khashayar Ghandi (Chemistry) - "Green Chemistry" novel and gentle synthesis methods that use "green" solvents rather than some of the harsher organic solvents involved in synthetic chemistry

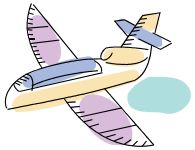
Mount Allison's Food Stream

Our food stream starts here

Producer

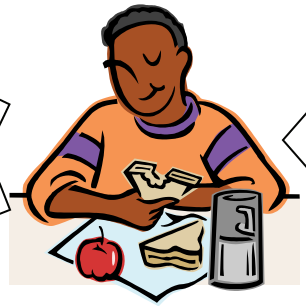
Processor

Transporter



Distributor

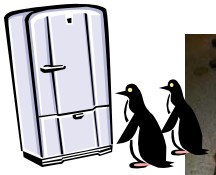
Jennings Dining Hall



Consumer

Waste Stream A: Waste that is flushed travels through the water treatment facility and eventually ends up in the Tantramar River

Waste Stream B: Left-over food is scraped by the consumer



Food waste is pulped and then stored in a refrigerated room

PBS picks up the waste from Jennings about three times a week and takes it back to their transfer station in he Sackville Industrial Park

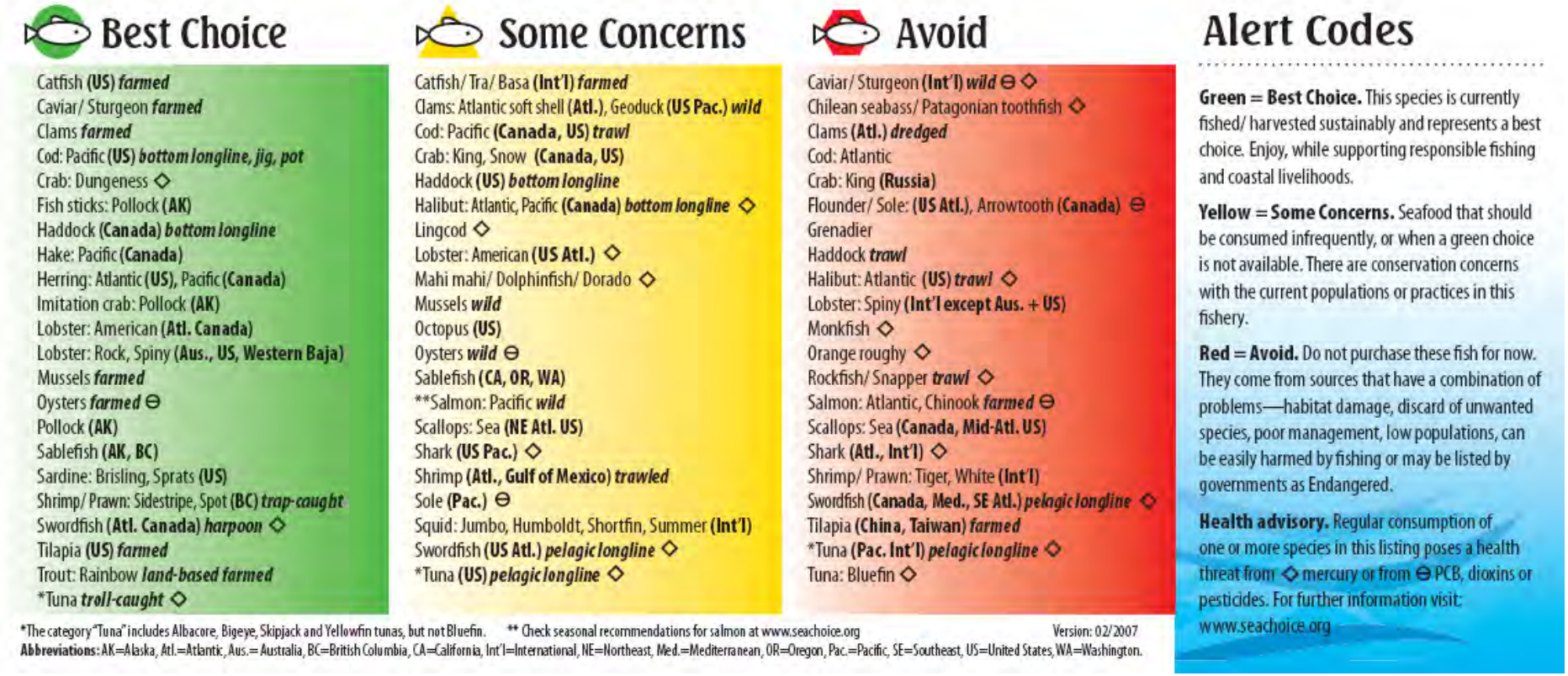
At the transfer station, the food waste is loaded onto a tractor trailer with other non wet/dry waste (eg. construction waste) and then driven to Westmorland Albert

At Westmorland, the food waste is buried in a landfill instead of being composted with the other "green" waste

Appendix 2.2

Canada's Sea Food Guide

From Sea Choice http://www.seachoice.org/files/asset/file/37/SeaChoice_Alertcard.pdf



Best Choice

Catfish **(US)** ***farmed***
Caviar/ Sturgeon ***farmed***
Clams ***farmed***
Cod: Pacific **(US)** ***bottom longline, jig, pot***
Crab: Dungeness ◇
Fish sticks: Pollock **(AK)**
Haddock **(Canada)** ***bottom longline***
Hake: Pacific **(Canada)**
Herring: Atlantic **(US)**, Pacific **(Canada)**
Imitation crab: Pollock **(AK)**
Lobster: American **(Atl. Canada)**
Lobster: Rock, Spiny **(Aus., US, Western Baja)**
Mussels ***farmed***
Oysters ***farmed*** ⊖
Pollock **(AK)**
Sablefish **(AK, BC)**
Sardine: Brisling, Sprats **(US)**
Shrimp/ Prawn: Sidestripe, Spot **(BC)** ***trap-caught***
Swordfish **(Atl. Canada)** ***harpoon*** ◇
Tilapia **(US)** ***farmed***
Trout: Rainbow ***land-based farmed***
*Tuna ***troll-caught*** ◇

Some Concerns

Catfish/ Tra/ Basa **(Int'l)** ***farmed***
Clams: Atlantic soft shell **(Atl.)**, Geoduck **(US Pac.)** ***wild***
Cod: Pacific **(Canada, US)** ***trawl***
Crab: King, Snow **(Canada, US)**
Haddock **(US)** ***bottom longline***
Halibut: Atlantic, Pacific **(Canada)** ***bottom longline*** ◇
Lingcod ◇
Lobster: American **(US Atl.)** ◇
Mahi mahi/ Dolphinfish/ Dorado ◇
Mussels ***wild***
Octopus **(US)**
Oysters ***wild*** ⊖
Sablefish **(CA, OR, WA)**
Salmon: Pacific ***wild*
Scallops: Sea **(NE Atl. US)**
Shark **(US Pac.)** ◇
Shrimp **(Atl., Gulf of Mexico)** ***trawled***
Sole **(Pac.)** ⊖
Squid: Jumbo, Humboldt, Shortfin, Summer **(Int'l)**
Swordfish **(US Atl.)** ***pelagic longline*** ◇
*Tuna **(US)** ***pelagic longline*** ◇

Avoid

Caviar/ Sturgeon **(Int'l)** ***wild*** ⊖ ◇
Chilean seabass/ Patagonian toothfish ◇
Clams **(Atl.)** ***dredged***
Cod: Atlantic
Crab: King **(Russia)**
Flounder/ Sole: **(US Atl.)**, Arrowtooth **(Canada)** ⊖
Grenadier
Haddock ***trawl***
Halibut: Atlantic **(US)** ***trawl*** ◇
Lobster: Spiny **(Int'l except Aus. + US)**
Monkfish ◇
Orange roughy ◇
Rockfish/ Snapper ***trawl*** ◇
Salmon: Atlantic, Chinook ***farmed*** ⊖
Scallops: Sea **(Canada, Mid-Atl. US)**
Shark **(Atl., Int'l)** ◇
Shrimp/ Prawn: Tiger, White **(Int'l)**
Swordfish **(Canada, Med., SE Atl.)** ***pelagic longline*** ◇
Tilapia **(China, Taiwan)** ***farmed***
*Tuna **(Pac. Int'l)** ***pelagic longline*** ◇
Tuna: Bluefin ◇

*The category "Tuna" includes Albacore, Bigeye, Skipjack and Yellowfin tunas, but not Bluefin. ** Check seasonal recommendations for salmon at www.seachoice.org Version: 02/2007

Abbreviations: AK=Alaska, Atl.=Atlantic, Aus.= Australia, BC=British Columbia, CA=California, Int'l=International, NE=Northeast, Med.=Mediterranean, OR=Oregon, Pac.=Pacific, SE=Southeast, US=United States, WA=Washington.

Alert Codes

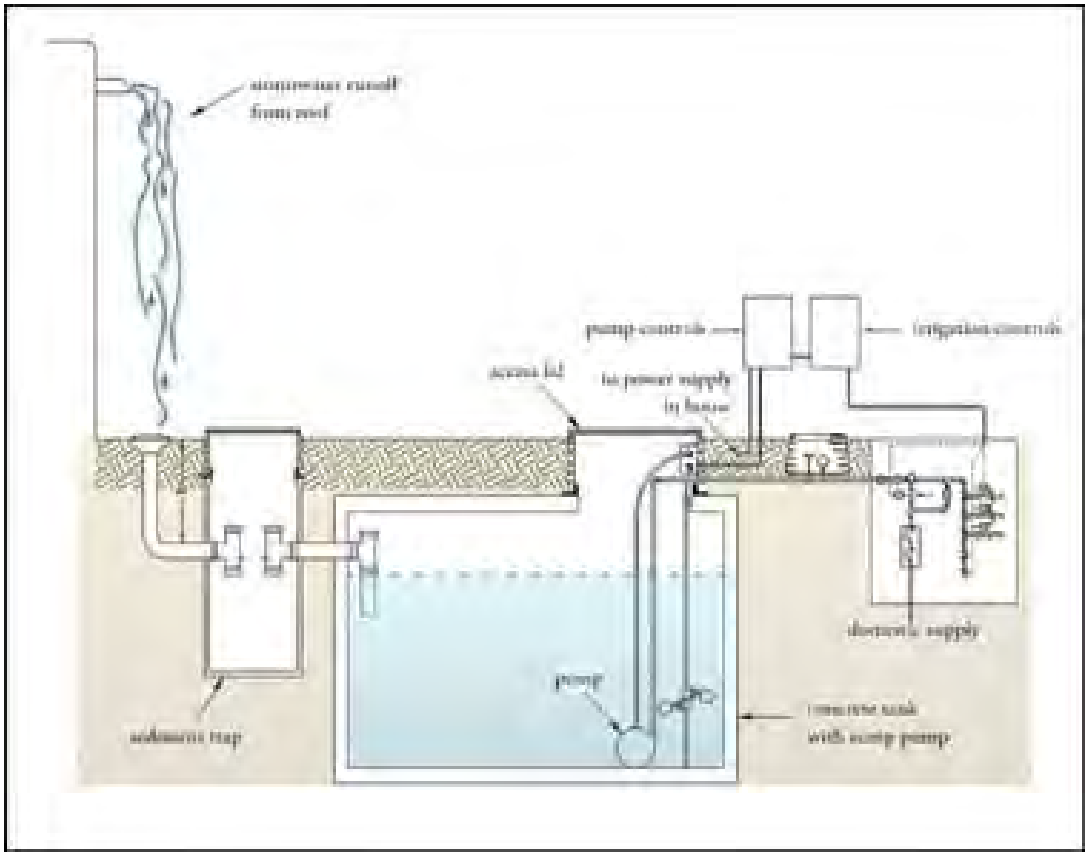
Green = Best Choice. This species is currently fished/ harvested sustainably and represents a best choice. Enjoy, while supporting responsible fishing and coastal livelihoods.

Yellow = Some Concerns. Seafood that should be consumed infrequently, or when a green choice is not available. There are conservation concerns with the current populations or practices in this fishery.

Red = Avoid. Do not purchase these fish for now. They come from sources that have a combination of problems—habitat damage, discard of unwanted species, poor management, low populations, can be easily harmed by fishing or may be listed by governments as Endangered.

Health advisory. Regular consumption of one or more species in this listing poses a health threat from ◇ mercury or from ⊖ PCB, dioxins or pesticides. For further information visit: www.seachoice.org

Appendix 3.1 - Water Cistern



Appendix 4.1 - Features of the New Student Centre

Replacements/Improvements

- Better insulated windows (thermally broken rain screen window system with bronze double glaze, argon filled, low-emissivity coating)
- Reduced solar heat gain and glare (high efficiency solar reflective glazing)
- Increased light diffusion (Solera glazing)
- Increased thermal resistance of flat roof areas
- Attempt to increase average thermal resistance of walls
- More efficient heating (cast iron heating panels with electric zone valves and wall mounted thermostats or sensors, in-floor radiant heat, radiant ceiling panels)
- Increased flexibility of building controls in computerized building management system (main network in accordance with ASHRAE BACnet protocol, local panels are common protocol system)

New

- Daylighting devices (multi-storey atrium, daylight sensors)
- Electric powered cooling (variable speed, air cooled chiller system)
- Free cooling and more efficient energy use (economizer damper control and supply temperature reset on ventilation system, 100% outside air use, enthalpy heat recovery wheels)
- Water stewardship (low flow plumbing fixtures, rainwater collection system)
- Environmentally friendly mechanical systems (lower emissions, CFC & HFC free refrigerants)
- Enhanced air quality (carbon dioxide sensors at supply and return ducts)
- Local line voltage control and variable lighting control (dimmers)
- Energy efficient initiatives at Tantramarsh Pub and Café

Appendix 6.1 – Air Emissions

Food production contributes to GHG emissions in many ways, from farm maintenance to live stock methane release to the transportation of the food. For this reason CA-CP averages the food emissions in the population input in the calculator.

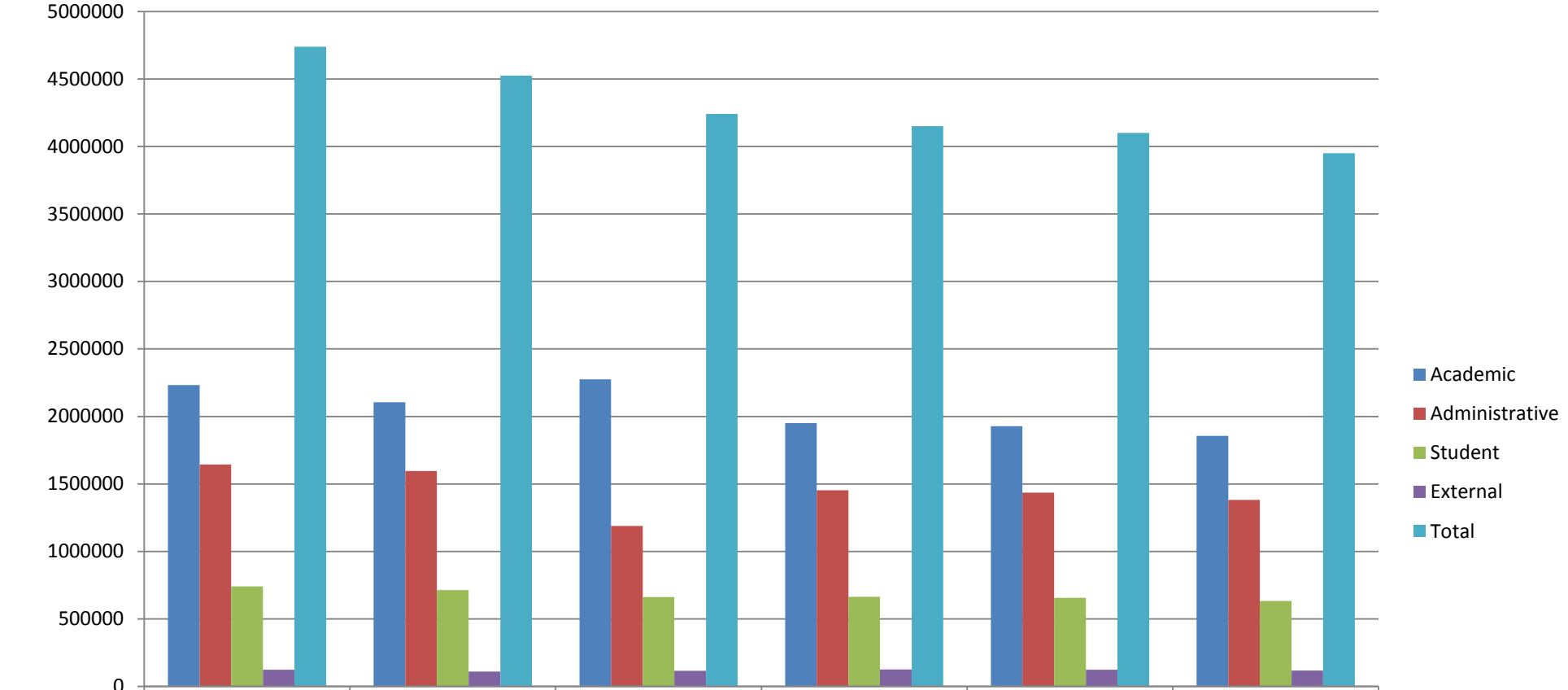
Appendix 7.1- Summary of Vehicle Fleet

Department	Type & Quantity	Tasks
Facilities Management		
• Grounds Keeping	4x4 truck (x2)* tractor (x3)* passenger lawn mower (x2)* sweeper (x1)	1 tonne-garbage ¾ tonne-snowplow -landscaping
• Trades	8-cyllinder truck (x1) 6-cyllinder truck (x2)	plumming electric & HVAC -primarily driven on campus (4-6km/day) -occasionally picks up parts from Home Hardware, Amherst, and Moncton
• Custodial	truck (x1)	-transports supplies from central storage room in Facilities Management building -used for security at night
Administrative Services		
• Bookstore	'93 Chevy van (x1)	-picks up mail from Sackville Post Office twice daily -transports mail around campus -used by Centennial Hall for moving -averages 8 km/day
• Aramark	*'08 Chevy Express RWD GI500 cargo van (x1)*	-catering -transporting food to Flying Bean and Golden A Café (no longer in practice as of Summer 2008)
Academic		
• Coastal Wetlands Institute	boat (x1) truck (x1)	scarcely used (<10hr/yr) -research -transport to the St. Andrew's field station

* =diesel
Italics=arriving soon

Appendix 9.1

Mount Allison Paper Purchasing



	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Academic	2231831	2106168	2275565	1950500	1927000	1856500
Administrative	1644133	1596144	1188044	1452500	1435000	1382500
Student	740309	713671	661250	664000	656000	632000
External	123227	109517	116641	124500	123000	118500
Total	4739500	4525599	4241500	4150000	4100000	3950000

Appendix 10.1-Guidelines for the Disposal of Waste Chemicals

Courtesy of Roger Smith, Safety Officer Academic Departments.

Solvents are collected as Hydrocarbon or Halogenated wastes, care should be exercised to avoid cross contamination of these two separate waste streams.

All other chemical wastes are to be collected in individual containers and clearly identified with the "HAZARDOUS CHEMICAL WASTE FOR DISPOSAL" label.

Chemically contaminated materials, such as silica gel from column chromatography or drying agents with residual solvents present, must be collected individually for disposal. Media used to absorb a chemical spill must be regarded as an hazardous chemical waste. The chemical involved in the spill must be identified on the disposal label.

Broken glass contaminated with chemical residues are to be collected in the containers provided for this purpose. These types of materials are disposable pipets, TLC plates, lab glassware & the like. Containers must not be overfilled..

It is not an acceptable practice to dispose of any material that could have chemical residues in the regular garbage stream since this material is disposed of at a land fill site.

Sharps materials for disposal generated in Flemington with possible biohazard contamination are under the direction of Wayne Anderson. Follow the guidelines on the containers provided in the Biology Laboratories

Sharps all other departments, materials such as razor blades, syringe needles, scalpel blades are to be disposed of in the SHARP MATERIALS containers. These materials will be incinerated. Note that disposable pipets are not considered as sharps, they should be placed in the broken glass containers.

Plastics, including gloves contaminated with chemical residues should be collected in wide mouth jars or pails and the chemical residue should be identified.

Explosives can not be included with the regular waste stream. Please contact the safety office if you have explosives for disposal. This would include chemicals such as Picric acid used in Bouins reagent.

Radioactive materials can not be included with the waste chemical stream for disposal. Dr.D. Fleming, Radiation Safety Officer should be contacted for guidelines for the disposal of radioisotopes.

Appendix 10.2 - Battery Disposal Operations

At Mt. A: A driver from Natural Harbors inspects batteries to see if they have been taped in groups to prevent the (+) and (-) charges from interacting before the container is sealed and brought on board OR they can be taken to Wheaton's All-in-One.

At WASWC: On Fridays and Saturdays, households can drop-off their used batteries. Rechargeable batteries are sent away to be recharged and reused elsewhere. Although recent progress has been made on recovering conventional batteries, they are still currently being sent away to be neutralized and buried underground in concrete cells. Their mobile unit makes stops in Sackville for hazardous materials cleanup in the spring and fall. Outside of these times, items can be taken to their HHW Depot in Berry Mills free of charge.

At Atlantic Industrial Services (located on the WASWC property): They deal with institutional (Mt. A), industrial, and commercial hazardous wastes exclusively.

Appendix 11.1 - Mount Allison's Integrated Pest Management (IPM) Procedure

(as determined by Grounds Superintendent Andrea Ward)

STEP 1: A STANDARD is set to determine the amount of insects, diseases, and weeds which are acceptable

STEP 2: The levels are then MONITORED

STEP 3: The "CULTURAL METHOD" is used whenever possible to ensure the plants are as healthy as possible. This involves keeping a minimum of 4 inches of topsoil on the beds. Kelp, compost, and fertilizer are also used to increase the health of the plants. Water is appropriately added.

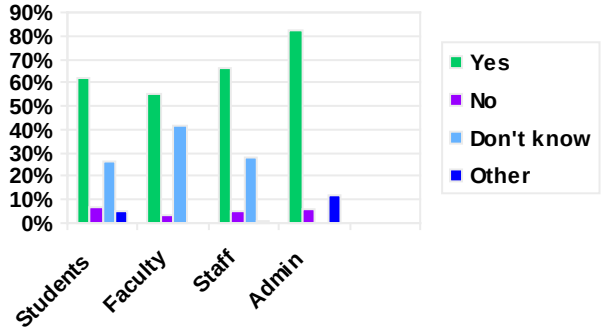
STEP 4: If, at this point, pests, weeds, or disease become an issue, MECHANICAL METHODS are used (parts of the plant are removed, wire brushes remove scale, flame thrower burns weeds, high pressure water removes insects, or insects are physically picked off plants)

STEP 5: If this doesn't work, and the problem increases to a level that was not deemed acceptable, ORGANIC means are considered first (such as insecticidal soap, and horticultural oil).

STEP 6: If that doesn't work, and the problem is considered threatening (i.e., Dutch Elm spreading from one tree to another potentially destroying several large trees), COMMERCIAL PESTICIDES are used.

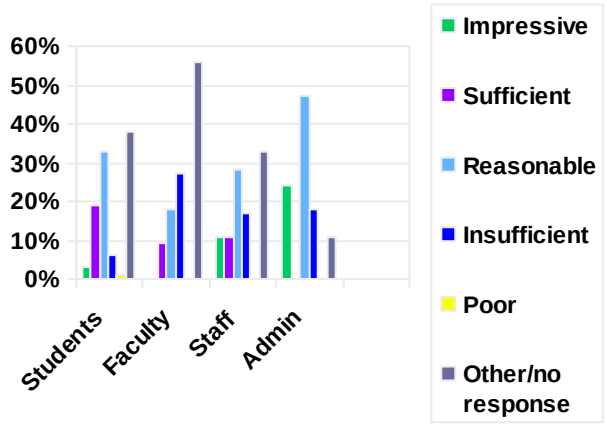
Appendix 14.1

Is Mount Allison University doing anything to take action on climate change?



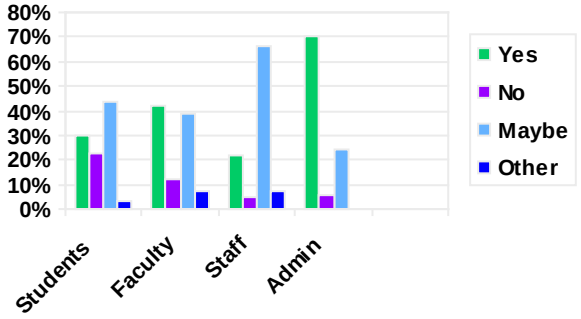
- Students: 62% say yes, 26% don't know, 7% say no
- Faculty: 55% say yes, 42% don't know, 3% say no
- Staff: 66% say yes, 28% don't know, 5% say no
- Administration: 82% say yes, 6% say no
-

How would you rate Mount Allison's action on climate change?



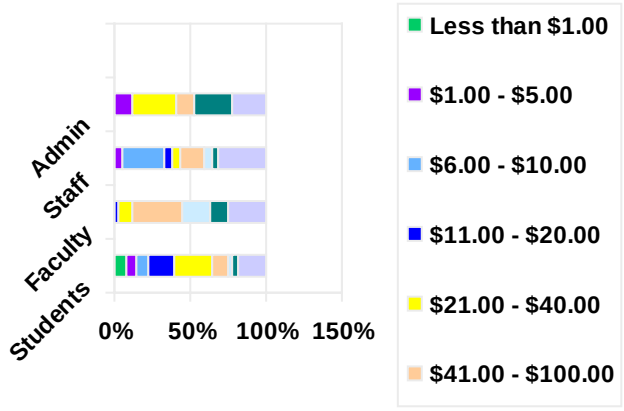
- Students: reasonable (33%), sufficient (19%), insufficient (6%), impressive (3%)
- Faculty: insufficient (27%), reasonable (18%), sufficient (9%)
- Staff: reasonable (28%), insufficient (17%), impressive (11%), sufficient (11%)
- Administration: reasonable (47%), impressive (24%), insufficient (18%)

Would you be willing to pay a fee if the money were put towards climate change initiatives?



- Students: 44% say maybe, 30% say yes, 23% say no
- Faculty: 42% say yes, 39% say maybe, 12% say no
- Staff: 66% say maybe, 22% say yes, 5% say no
- Administration: 70% say yes, 24% say maybe, 6% say no

How much would you be willing to pay?



- Students: the majority of students said $7.00-$15.00
- Faculty: the majority said $25.00-$20.00
- Staff: the majority said $4.00-$6.00
- Administration: the majority said $10.00-$15.00 and $31.00-$40.00

Appendix 14.2 - The Talloires Declaration

We, the presidents, rectors, and vice chancellors of universities from all regions of the world are deeply concerned about the unprecedented scale and speed of environmental pollution and degradation, and the depletion of natural resources.

Local, regional, and global air and water pollution; accumulation and distribution of toxic wastes; destruction and depletion of forests, soil, and water; depletion of the ozone layer and emission of "green house" gases threaten the survival of humans and thousands of other living species, the integrity of the earth and its biodiversity, the security of nations, and the heritage of future generations. These environmental changes are caused by inequitable and unsustainable production and consumption patterns that aggravate poverty in many regions of the world.

We believe that urgent actions are needed to address these fundamental problems and reverse the trends. Stabilization of human population, adoption of environmentally sound industrial and agricultural technologies, reforestation, and ecological restoration are crucial elements in creating an equitable and sustainable future for all humankind in harmony with nature.

Universities have a major role in the education, research, policy formation, and information exchange necessary to make these goals possible. Thus, university leaders must initiate and support mobilization of internal and external resources so that their institutions respond to this urgent challenge.

We, therefore, agree to take the following actions:

1. Increase Awareness of Environmentally Sustainable Development
Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

2. Create an Institutional Culture of Sustainability
Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward global sustainability.

3. Educate for Environmentally Responsible Citizenship
Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.

4. Foster Environmental Literacy For All
Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.

5. Practice Institutional Ecology
Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.

6. Involve All Stakeholders
Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.

7. Collaborate for Interdisciplinary Approaches
Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.

8. Enhance Capacity of Primary and Secondary Schools
Establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment, and sustainable development.

9. Broaden Service and Outreach Nationally and Internationally
Work with national and international organizations to promote a worldwide university effort toward a sustainable future.

10. Maintain the Movement
Establish a Secretariat and a steering committee to continue this momentum, and to inform and support each other's efforts in carrying out this declaration.